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THE UNIVERSITY BULLETINS. Fourth Series: Number 5—Part 4.

University of Pennsylvania

Proceedings

OF

Commencement

June 15, 1904

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JUNE, 1904
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JUNE, 1904.

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ONE HUNDRED AND FORTY-EIGHTH

COMMENCEMENT

Wednesday, June 15, 1904.

Programme

Procession

Graduating Classes, Deans and Members of Faculties, Members and Guests of the Corporation, Candidates for Honorary Degrees, the Chaplain and Orator of the Day, the Vice-Provost, the Provost.

Invocation

Hymn—"Our Father in Heaven"

Oration . . . . . Rev. Dr. David McConnell Steele

Hymn—"Hail! Pennsylvania"

Conferring of Honorary Degrees

Conferring of Degrees in Course

Hymn—"Now Thank We All Our God"

Benediction

AMERICAN ACADEMY OF MUSIC
PHILADELPHIA

Honorary Degrees

Doctor of Sacred Theology

Richard Henry Nelson

Doctor of Science

George Dock

Russell Henry Chittenden

Doctor of Laws

Horatio Curtis Wood

Henry Pickering Bowditch

Frederick Treves

Jean Adrien Antoine Jules Jusserand

Degrees in Course

Bachelor of Arts

John Aubrey Anderson
Charles Edward Asnis
Robert Burns
Arthur Cleveland
Frank Levis Cloud
Abraham Nowell Creadick
Orville Strang Duffield
Charles Warren Gaul
Leopold Calvin Glass
James Kiernan Heilner
Wesley Lynn Hemphill
Gordon Vincent Hoskins
Josiah Marshall Linton
Gordon Howard Luckenbill
William Herbert Gorton Mackay
William Otto Miller
Marshall Shapleigh Morgan
George Washington North, Jr.
Edgar Amos Paun
Walter Cresson Pugh
Thomas Ellis Robins
Percy Robbins Stockman
George Arthur Walton
Winton John White

Bachelor of Music

Urban Henry Hershey
Samuel Tudor Strang

Bachelor of Science

Samuel Meigs Beyer
Thomas Denis Bolger
Winfred Windsor Carver
Howard Sanna Christman
Harold Sellers Colton
Livingston Corson
Jay Dickerson
Joseph Elmer Dodson
John Christie Duncan
Harry Hand Eldredge
Henry Preston Erdman
Louis Morton Fleisher
Moyer Springer Fleisher
William Welsh Harrison, Jr.
James Osborne Hopwood
Paul Max Kempf
Murray Baldwin Kirkpatrick, Jr.
Charles Percy Major
James Nicol Muir
Isaac Anderson Pennypacker
William Hobart Porter
Layton Bartol Register
Walter Roberts
Hugo Schlatter
Walter Young Shaw
Walter Bell Smith
William Stevenson Smith
Clarence Pratt Sterner
Charles Sharpe Townsend
Edward Clifton Waddington
Albert Henry Wanner
Jacob Israel Weinstein
Edward Embree Wildman

Bachelor of Science in Architecture

Alexander Mackie Adams
John Thompson Emlen
Arthur Benjamin Gill
William Edward Groben
Henry Closson Hibbs
Leicester Bodine Holland
James Bullen Karcher
James William Keagey
Walter Mellor
Edwin Bateman Morris
Frank Winthrop Reynolds
Henry Dunn Wood

Bachelor of Science in Biology

Emma Louise Burk
Margaret Harris Cook
Anna Maria Cullen
Isaac Feinberg

Bachelor of Science in Chemical Engineering

William John Cooper
William James Crowell, Jr.
George Hazzard West

Bachelor of Science in Chemistry

Norman Nobles Blye
Sydney Davis
Arthur Wayland Dox
Samuel Felton Grove
Charles Chase Henry
William Mixter Howard
Claude Poole
Julius Shmookler
Raymond Wells

Bachelor of Science in Civil Engineering

Frank Wesley Cooper
Edward Thomas Davis, Jr.
George Freeman, Jr.
William Linker
Louis Henry Losse
William Ainsworth McIntyre
Melbourne Stanton Taylor, Jr.
Arthur Carling Toner

Bachelor of Science in Economics

Joseph Albert Beck
William Henry Blaney
Thomas Conway, Jr.
Joseph Herbert Cope
John Joseph Crimean, Jr.
Charles Armand Elliott
Montraville Glenn Folger
Albert Anthony Giesecke
David Leopold Gross
Waldo Noble Hackett
Harold Atlee Hallowell
Thomas Philip Hammer
Samuel Snyder Herman
Howard Barr Hileman
Edward Neil Kirkbride
Van Antwerp Lea
Robert Lincoln McNeil
Edward Preston Moxey, Jr.
Walter Benton Pantall
Edmond David Preston
Frederic Wilson Prichett
Ellwood Charles Rutschman
Charles Schneeberg
Harold Aston Shryock
George Otis Spencer
DeWitt Leigh Strauss
Joseph Warner Swain, Jr.
William Harrison Upson, Jr.
Ralph Russell Zane

Bachelor of Science in Electrical Engineering

Henry Lewis Benner
Frederick Andrew Bokop
William Henry Butler, Jr.
Henry Gebhart
William Ossian Milton
Herbert Stewart Murphy
Saul Schulhoff
Wilmer Middleton Shallcross
Sidney Benjamin Strouse
Harry Edwin Tunnell

Bachelor of Science in Mechanical Engineering

James Ashworth
Walter Davis Banes
Leonard Tillinghast Beale
Frank Beener
Charles Frederick Brice
Franklin Smith Chambers
Frank Shaw Clark
Edwin Chapin Dessalet
Samuel Jackson Dickey
Henry Donald Fisher
Harry Meyer Gansman
Thomas Bertram Genay
Francis Hopkinson Gilpin
John Sobieski Haug
Frederick Lewis Hough, Jr.
William Gibbons Humpton
Ralph Becker Kleinert
Lea Moore
Pablo Joaquin Munoz
Edward Brittain Myers
Howell Dundas Pratt
Paul Peter Prudden
John Ignatius Rogers, Jr.
Colin Douglass Smith
Albert Alonzo Springer
Caleb Cresson Wistar, Jr.
John Linn McKim Yardley

Master of Science (Technical)

John Christie Duncan
Thomas Hovenden
Harold Mitchell Peirson

Electrical Engineer

Harold Calvert

Mechanical Engineer

George Norwood Comly
Owen Brooke Evans
Harold Thompson Moore
Arthur Warner

Doctor of Philosophy

Donald Sinclair Ashbrook
Lloyd Balderston, Jr.
Howard Winter Brubaker
Isaac Joslin Cox
William Backus Guitteau
Roy Dykes Hall
Leslie Howard Ingham
Hugh Sears Lowther
Henrietta Josephine Meeteer
Charles Jastrow Mendelsohn
John Franklin Meyer
Sarah Pleis Miller
James Alan Montgomery
Ralph Emerson Myers
William Theodore Paullin, Jr.
Leonidas Warren Payne, Jr.
Everett Franklin Phillips
Kate Watkins Tibbals

Master of Arts

Benjamin Franklin Finkel
John Frazer
Hyman Leo Grabosky
Helen Theodora Kirk
Charles Moore Magee
Ethel Elizabeth Mudie
Jacob Hartman Rohrbach
Watson Bartemus Selvage
Louise Baird Wallace
Helen Augusta Wilder
Mary Grier Willson

Master of Science

Paul Gerhardt Cressman

Bachelor of Laws

John Henry Radey Acker
Herbert Warren Bartlett
Robert Alexander Beggs, Jr.
Charles DeFord Besorè
Charles Bowden
Albert Christian Brand
William Branyan
James Joseph Breen
Robert Morris Brookfield
Andrew Benjamin Carlin
Alexander Henry Carver
Francis Stanislaus Clark
Bernard Randolph Cohn
Meredith Bright Colket
Hamilton Clark Connor
William Thomas Connor
Lemuel Howell Davis
Aaron Leinbach Deeter
John Morris Dredger, Jr.
Henry Sandwith Drinker
John Robert Earnshaw
John Oliver Eberhard, Jr.
John William Elwell
Isaac Grantham Gordon Forster
Alfred Edgar Freeman
Rees Jones Frescoln
Victor Frey
Thomas Francis Gain
Joseph Vincent Gallagher
John Miles Gibbons
John Clayton Gilpin
Henry Sterling Gill
Joseph Goodman
Edward Joseph Gormley
Frederick Carl Grote
Frederick Royal Hammett

Bachelor of Laws—Continued

Alfred Harris, Jr.
George McClellan Henry
John Harrison Hutchinson
John Mundell Hutchinson
William Aloysius Jennings
John Glass Kaufman
Hiram Harpel Keller
Edward Aloysius Kelly
Charlotte Kelsey
George Cascaden Klauder
Joseph Lorenz Kun
William Robert Langfeld
Francis Patrick Leary
David Levinson
Walter Cook Longstreth
Benjamin Harrison Ludlow
Joseph Leo McAleer
John Kirk McCurdy
Samson McDowell
Herbert Leonard Maris
James Fouché Matthews
Samuel Wright Mifflin
Edward David Mitchell
William Felix Norris
Francis Xavier Renninger
James Wilson Rhodes
John Adelbert Riggins
Joel Walter Rosenberg
Daniel Raymond Rothermel
Jerome Joseph Rothschild
Albert Creig Rutherford
Henry Saxe
Gilbert Frank Schamberg
Lionel Teller Schlesinger
Eugene George Schwinghammer
Irwin Labe Sessler
Walter Lee Sheppard
James Aloysius Somers
Boyd Lee Spahr
Fletcher Wilbur Stites
Joseph Hoffman Sundheim
Joseph Beck Tyler
Edward McLain Watters
John Maurice Weaver
Harry Heller Weintraub
Gustavus Cosmos Seidel Welzel
Charles Felix Wharen
James Edgar Wilkinson
John Ambler Williams
Howard Barker Wilson
*Joseph Robert Wilson
William Abbott Witman, Jr.
Robbin Bayard Wolf
Graham Cox Woodward

Anne Florence Yerger

Doctor of Medicine

J Paul Austin
Edward Warren Beach
Harvey Lelan Bates
Warren Joshua Bieber
Paul Harold Bikle
Charles Louis Billard
Carl Boardman
Reuben Arnold Bogia
William Redfield Butt
Virginius Lynn Brown
Andrew Crozier Cameron
Ralph Oakley Clock
William Warren Cowgill
William James Creighton
William Judd Crookston
James Crowe
David Dale
Howard E Dean
Oren Manfred Deems
Albert Joseph Devlin
Bernard C Dorset
Ardrey Whiddin Downs
Floyd D Drumheller
William Drayton, Jr.
Albert Plummer Duryee
John Henry Fager
Wrey Farwell
Hyma Feigenbaum
William Garfield Fox
John Davidson Frame
Raymond Stoner Freed
James Roy Freeland
Leonard Davis Frescoln
Cyrus Ward Fridy
Samuel Howard Gilliland
John Kyle Gordon
Robert Lochead Gray
Erle Goodfellow Hawman
Alexander Bayly Hayward
Francisco Jose Hernandez
Francis R Holbrook
Harry Louis Homer

* As of the Class of 1902.

Doctor of Medicine—Continued

Harry Marvin Hosmer
Jacob Husik
Carlyle P Hussey
Horace Howard Jenks
Stuart Smith Jordan
Fred Harlen Klaer
Floyd Elwood Keene
Thomas Charles Kelly
William Solomon Kuder
James William Leech
Samuel Augustus Leinbach, Jr.
Paul A Lewis
Seth Andrew Light
Edward D Lovejoy
William Edward MacCoy
James Garrett McCollin, Jr.
Alexander Vaughan McDonald
Thomas J McGurl
George Scott McKnight
James Clyde Markel
Francisco J Martinez S
Edward Browning Meigs
John Bernard Mencke, Jr.
Ralph Eaton Miller
Ralph Erskine Moffatt
Charles McKinney Nice
Henry James Nichols
Donald Hollingsworth Noble
Alexandrino de Moraes Pedroso
John Read
Alphons John Reiner
Sidney Joseph Repplier
Jacob Rosener
Edmund Russell
James Bernard Rucker, Jr.
Clyde John Saylor
Wayne Leinbach Shearer
Pio Angelo da Silva
Jacob George Silverman
Chester C Sloan
George Chester Smith
Michael Dugan Spurck
William Myron Stockwell
Philip Samuel Stout
Robert Hallock Wright Strang
Charles Gunnison Strickland
Edmund Buckner Sweeney
Theodore Emil Teah
Charles Menger Truschel
Frederick Oswin Waage
William Richard Warren
Winford Oliver Wilder
Condie Knox Winn
George Jesse Wright

Doctor of Dental Surgery

Frank Lawrence Adams
Walter Bowne Allen
Frederick Franklin Andrew
Ruhl Bacheller
Edward Wood Baker
Norton Leopold Baldauf
Edward Joseph Barabe
Horace Ephraim Barker
Eurico Barreiros
Paul Leon Bassett
Irving W Brown
Robert Wallace Brown
Louis Bruce
Russell Knowles Bryer
William Morley Cameron
James Dexter Carleton
John Henry Carter
Jean Francois Xavier Cauhepe
Asa Munson Chandler
Holbrook Alfred Chatfield
Francis Michael Close
Arthur Francis Cornelius
Emerson George Curry
Walter Bernard Daehler
George Frederick Swanson Dansey
Eugene Leon Pierre Darcissac
Ernesto del Pino
Georges Arthur Demeulle
Norman Sydney Deravin
Frederick Joseph Ebert
Zacharie Eudlitz
Alexander Ferguson
Hardinge Clarence Fitzhardinge
Frederick Robert Forster
Arthur Russell Fraser
Oscar Freudenfeld
Fred William Fuellhart
Forry Rohrer Getz
Wilford Stanley Gladfelter
Carl Schurz Gleason
Charles Edwin Gold
Edward C Green
William Alexander Gunn
Leonard Melcherton Gunton
Ezra Allen Hahn
Leonard Clive Hales
Francis Albert Harwood
Ford Henderson Hayes

Doctor of Dental Surgery—Continued

William MacAllister Hendrie
Julius Albert Hermann
Fredrich Paul Herrmann
John William Hesse
Albert Charles Hitzelberger
Edwin Almus Holbrook
William Coleridge Patteson Hough
George Harrison Hubbard
George Edward Hutchinson
Andrew Francis Jackson
Charles Homer Jaco
Norman Lee Jameson
Aelyas Kassab
Howard S Kiess
Ralph Raymond Kingsley
Fred William Koons
P C Hollis Lapp
Francis Daniel Larson
William Wheeler Leonard
Oborn Garrett Levis Lewis
William Douglas Macdonald
Lester Llewellyn Macnamara
Francis Patrick McEnerney
Thomas Patrick McNulty
Leroy Robert Mahaffey
Claude Mayham Mallery
Perley Haskell Markham
Laurence Sydney Marks
Georges Martinier
Henri Masson
Frank Mellersh
Albert Garfield Morrish
Howard Osgood Moxom
Albert Llewellyn Mulford
Daniel Edward Myers
Emmett O'Neill, Jr.
Hambly Samuel Orchard
Irvine Alexander Orton
James Curtis Parsons
James Augustus Patten
Filinto de Moraes Pedroso
Herbert George Pettebone
Joseph Arthur Pierson
Joseph Albert Potter
Francisco de Paulo Portuondo
George Stanley Powell
Clarence Erwin Pyle
Andres Elijio Ros y Castillo
Albert Lewis Roth
George Henry Rourke
Ernest Nichols Ryder
Sidney Alexander Sands
Vincent Rogers Sayward
Robert Earl Seyfert
Elwin Robert Shedden
Oscar Senior
Wolf Sklar
Philip Pawling Stalford
John Clark Stillman
William Manley Sullivan
Georges Adolph Tanquerey
Charles Stough Taylor
Isaac Chalfant Tracy
Charles Murray Turpin
Amos Parker Underwood
José Valderrama y Barrenechea
Amos Beeber Vastine
Ernest William Vickers
Charles Francis Welch
Raymond Gage Wildrick
Percy Norman Williams
William Isaac Zyner

Doctor of Veterinary Medicine

James Alfred Benner
Harvey Wilson Burd
Arthur Hanson Burling
Alonzo Henry Cheney
Ralph Lee Clements
George Alexander Dick
Ernest Charles Dingley
George Arthur Dodge
Henry Hell
William Lewis Herbert
David Elwyn Hickman
Robert Irvin Lachlan
William Jacoby Lentz
Philip Charles Linderman
Leslie George Marshall
Robert Murdock Martin
Columbus Elbert Mauldin
John Henry Morse
Thomas Edward Munce
Solomon Martin Nissley
Joseph Tarleton Quarll
Daniel Ellsworth Reinert
Louis Rogers
Walter Eli Sharp
Arthur Henry Spencer
Charles Amery Stewart
John Howard Turner
Mark White, Jr.

Certificates, Honors and Prizes

Certificates

AWARDED BY THE ACADEMIC COUNCIL OF THE COLLEGE.

CERTIFICATES OF PROFICIENCY

In Architecture

FRANCIS CHANDLER BATEMAN, CHARLES THEODORE BISWANGER,
SAMUEL DALE BRADY, SAMUEL HAYES BAILEY MERCER,

In Business Practice and Banking

ALBERT EDWIN KOCH.

In Civil Engineering

WALTER SCOTT YOUNG.

Honors

IN THE COLLEGE.

SENIOR HONORS

In Arts

THOMAS DENIS BOLGER, WESLEY LYNN HEMPHILL,
ARTHUR CLEVELAND, HUGO SCHLATTER,
LEOPOLD CALVIN GLASS. GEORGE ARTHUR WALTON.

In Finance and Economy

ALBERT ANTHONY GIESECKE, ROBERT LINCOLN MCNEIL,
THOMAS PHILIP HAMMER, EDWARD PRESTON MOXEY, JR.

In Mechanical Engineering

FRANKLIN SMITH CHAMBERS, WILLIAM OSSIAN MILTON,
HENRY DONALD FISHER, JOHN IGNATIUS ROGERS, JR.

In Chemical Engineering

WILLIAM JOHN COOPER, GEORGE HAZZARD WEST.

In Chemistry

CLAUDE POOLE.

In Biology

EMMA LOUISE BURK.

SOPHOMORE HONORS

In Arts

William Robert Murphy, Carl Sina Zellner.

In Science and Technology

Frederic Harold Tunnell.

In Civil Engineering

Albert Theodore Goldbeck.

In Chemistry

Edgar Theodore Wherry.

In the Department of Law.

Graduated *cum laude:*

Boyd Lee Spahr, John Henry Radey Acker
Jerome Joseph Rothschild, Henry Sandwith Drinker
Victor Frey, Thomas Francis Gain,
Aaron Leinbach Deeter.

Prizes

In the College.

I.

Entrance Prizes.

1. The Eugene Delano Prize, for the best special examination in the French and German required for entrance to College. To Solomon Leopold Rosenberg.

2. A prize, offered by the Class of 1880, for the best special examination in Mathematics, by a candidate for admission to the courses in Arts and Science. To Hugo Arthur Müller.

II.

Faculty Prizes.

1. A prize for the best Essay in Intellectual and Moral Philosophy by a member of the Senior Class. Subject: *Did Hobbes Identify Right Conduct with Conformity to Positive Law?* To Livingston Corson.

2. A prize for the best examination by a member of the Freshman Class on Greek Prose Composition with the Accents. To John Cooper Mendenhall, with Honorable Mention of Michael William Jacobs, Jr.

3. A prize to a member of the Senior Class, for the most meritorious work in the German Language and Literature over and above the regular course. (Not competed for.)

4. A prize to a member of the Senior Class, for the most meritorious work in the French Language and Literature over and above the regular course. (Not competed for.)

5. A first prize and a second prize for the best and second best examination on the Lectures on Quaternions given to the Voluntary Junior Class. Equally to Daniel Roberts Harper, 3d, and Samuel Rowland Marriner Orum.

6. A prize for the best Essay in History and English Literature by a member of the Senior Class. Subject: *Elizabethan Voyages in Search of the Northwest Passage.* (Not awarded.)

7. A prize for the best Essay by a member of the Junior Class. Subject: *The Poetry of John Davidson.* To Percy Van Dyke Shelly.

8. Three prizes, of equal value, to be awarded to the best three speakers taking part in the annual debate between the Sophomore and Freshman Classes. To Scott Nearing, of the Class of '06; Zygmunt Stephen Leymel, of the Class of '07; William Homer Walker, of the Class of '06.

9. A first prize and a second prize for the best and second best preparations illustrating the anatomy of any vegetable. (Not competed for.)

10. A first prize and a second prize for the best and second best preparations illustrating the anatomy or embryology of any animal. First prize to Marion Mackenzie: second prize not awarded.

11. A prize to the member of the Sophomore Class who shall pass the best special examination in sight reading of Latin. To John Joseph Stetser, with Honorable Mention of Edward Wallace Chadwick.

12. A prize to the member of the Sophomore Class who shall pass the best special examination in sight reading of Greek. To Francis Carr Stifler.

III.

Prizes Founded by Organizations.

1. The Henry Reed Prize, founded by the Society of the Alumni, for the best English Essay by a member of the Senior Class. Subject: *The Poetry of Thomas Randolph.* To Charles Edward Asnis, with Honorable Mention of Wesley Lynn Hemphill.

2. A prize for the best, and a prize for the second best, Latin Essay by a member of the Graduating Class, offered by the Society of the Alumni. First prize not awarded : second prize to WESLEY LYNN HEMPHILL.

3. A prize for the best, and a prize for the second best, Original Declamation by a member of the Junior Class, offered by the Society of the Alumni. To SIDNEY LOUIS WELLHOUSE and FREDERIC ANTHONY CHILD, respectively.

4. THE JOSEPH WARNER YARDLEY PRIZE, founded by the Class of 1877 in memory of their classmate, for the best Thesis in Political Economy by a member of the Senior Class. Subject: *The Effect of the High Price of Coal on Manufactures in Eastern Pennsylvania.* (Not competed for).

5. A prize founded by the PHI KAPPA SIGMA FRATERNITY in honor of their founder, SAMUEL BROWN WYLIE MITCHELL, M. D., of the Class of 1852, for the most meritorious work done in the Course in English Composition of the second year. To FREDERICK HAROLD TUNNELL.

6. THE ASSAYERS AND MINERS GANGUE offers a prize to Post-Seniors in Chemistry and Seniors in Chemistry(four-year course). To CLAUDE POOLE.

7. THE NATIONAL SOCIETY OF THE SONS OF THE AMERICAN REVOLUTION PRIZE for the best essay on some subject connected with American Revolutionary History. Open only to Juniors. Subject: *The Principles Fought For in the Revolution.* (Not competed for).

8. THE T-SQUARE CLUB of Philadelphia offers annually two prizes of membership in the organization. They are awarded in October of each year to those two members of the Senior and Second-year Special Classes in Architecture, respectively, who present the best set of drawings executed in course. The prize memberships cover the period of the student's connection with the University, without the payment of dues. To HENRY DUNN WOOD and CHARLES HENRY BISWANGER, respectively.

9. THE SOCIETY OF COLONIAL WARS offers annually a prize for the best essay presented by any member of the Junior and Senior Classes in the College, on a subject relating to pre-Revolutionary Colonial History, and approved by the Society. Subject: *Colonial Taxation and the American Revolution.* (Not awarded).

10. THE PRIESTLEY CLUB, composed of Alumni of the Chemical Department, offers annually a prize to that member of the Graduating Class (Post-Senior or Senior, four-year courses, Regular or Special), whose work in Chemistry for that year is most meritorious. To ARTHUR WAYLAND DOX.

IV.

Prizes Founded by Individuals.

1. A prize founded by Henry LaBarre Jayne, of the Class of 1879, for the best English Composition by a member of the Freshman Class. Subject: *The Verse of William Makepeace Thackeray.* (Not awarded.)

2. A prize founded by D. Van Nostrand, Esq., for the member of the Junior Class in Civil Engineering who attains the highest general average of scholarship. To William Parvin Starr.

3. The George Allen Memorial Prizes, founded by Joseph G. Rosengarten, Esq., and offered to members of the Junior Class taking the Greek and Latin courses, as follows:

In Latin, for the best examination upon selections from Latin Literature of the Empire. To Wilton Wallace Blanckè. Second Prize (offered by the Faculty). To Lewis Burtron Hessler.

In Greek, for the best examination in the *Oration of Demosthenes on the Crown.* To Benjamin Newcomer Bird. Second Prize (offered by the Faculty). (Not awarded).

4. The Willis Terry Prizes.—The following prizes, open only to students in the course in Finance and Economy, have been established by Henry C. Terry, Esq., as a memorial to his son, Willis Terry, a graduate of the Class of 1896:

a. A prize for the student of the Freshman Class who shall have the best standing for the year. To Robert Augustus Jacobs.

b. A prize for the student of the Sophomore Class who shall have the best standing for the year. To George Wells Bond.

c. A prize for the student of the Junior Class who shall have the best standing for the year. To Adolph Teller Kohn.

d. A prize for the student of the Senior Class who shall have the best standing for the year. To Edward Preston Moxey, Jr.

The recipient of the prize in any year shall not be eligible for the prize in succeeding years.

e. A prize to be awarded annually to a student of the Senior Class; the recipient to be designated as the Willis Terry Graduate Scholar for the following year. Subject: *Reciprocity.* To Thomas Conway, Jr.

5. Two Debating Prizes, established by William West Frazier, Jr., a first prize and a second prize, awarded in a public debating contest. To George Wendel Maxey, '06 Law, and William Robert Langfeld, '04 Law.

6. The Frazier Prize.—George H. Frazier, Esq., of the Class of 1887, offers annually a prize of a standard work in literature, to be chosen by him, and of a value of one hundred dollars, to the student in the College of the University of Pennsylvania, who, being a member of the football team, baseball team, track team, or of the crew, shall attain the highest standing in scholarship. To Joseph Albert Beck.

7. The Arthur Spayd Brooke Memorial Prize in the School of Architecture, of a cash value of fifty dollars, is awarded annually in the form of gold, silver and bronze medals for merit in a subject of study, as designated. The prize has been established by Maria Wharton Brooke as a memorial to her son, Arthur Spayd Brooke, a graduate in Architecture of the Class of 1897. Awarded in 1903–04 in the Senior Class, for high and constant excellence in Design, the Gold Medal, with "honors," to Henry Dunn Wood; the Silver Medal to Carl Eugene Howell; Bronze Medal to James Bullen Karcher.

8. The J. S. H. Prizes.—The following prizes are offered in the Departments of Biology and Architecture:

(*a*) *In the Department of Biology.*

1. A prize offered to the student in the Second-year Class in the four-year course, or the two-year course, who, having taken the entrance examinations without conditions, shall have the highest standing in the class: the term standing and conduct to be determining factors, as well as the standing for examinations. To Edward Rockhill Heacock.

(*b*) *In the Department of Architecture.*

To the students in Interior Decoration, a prize is open similar in all respects to that in Biology, provided such students have taken the full entrance requirements for the Department of Architecture. (Not awarded.)

9. The John Stewardson Memorial Scholarship in Architecture.—The value of this Scholarship is one thousand dollars, and the holder is required to spend one year in travel and in the study of architecture in Europe under the direction of the Managing Committee. The award is made annually to that candidate successful in the final examination in design. To Christian George Spoerl, (B. S. in Arch., Pennsylvania, 1903).

10. The Mulford Prize, established through the generosity of William H. Mulford, Esq., of the class of 1902, is awarded annually to that member of the Graduating Class who shall attain the highest excellence in the expressive reading of Latin Prose and Verse, as shown by a special examination. (Not competed for).

11. The George Schleicher Prize.—Under the will of the late George Schleicher, of Philadelphia, The German Society of Pennsylvania holds in trust a fund for maintaining in perpetuity a prize to be named after the testator. This prize is awarded annually to the best student—of whatever nationality he may be—in the German Language or German Literature or both. To Arthur Wayland Dox.

12. A prize is offered annually by Dr. S. Weir Mitchell for the best thesis on *The Autumnal Coloration of Plant Parts*. Competition is open to advanced undergraduate and graduate students in Botany, investigations to be pursued for not longer than two years. (Not competed for.)

13. The Alumni Fellowship in Architecture.—Open only to Pennsylvania Alumni ; the holder being required to spend not less than one year in foreign travel and study, under a program arranged with the Professor of Architecture, and approved by the Provost. Persons who have taken either the degree of the four-year course or the certificate of the two-year special course, and who have neither secured another traveling scholarship nor admission to the Ecole des Beaux Arts, are eligible to the competitions, which are held annually. Established in 1902-03, and to continue for five years. To Luther Morris Leisenring (Certificate of Proficiency in Architecture, Pennsylvania, 1898).

In the Department of Law.

The Faculty Prizes, for the best written examination with all the Professors. (Not awarded.)

Henry Sandwith Drinker, Jr., was appointed Fellow of the Department of Law for one year.

The P. Pemberton Morris Prize, for the best written examination in Evidence, Pleading and Practice at Law and in Equity. To Robert Alexander Beggs, Jr. ; Honorable Mention of Boyd Lee Spahr.

The Sharswood Prize, established by the Alumni of the Department of Law, for the best Essay by a member of the Graduating Class. To Henry Sandwith Drinker, Jr., for his essay entitled: "*The Admissability of Evidence as part of the Res Gestae in Pennsylvania.*"

The Meredith Prize, established by the Alumni of the Department of Law, for the second best Essay by a member of the Graduating Class. (Not awarded).

In the Department of Medicine.

The Alumni Medal to the member of the Graduating Class who attains the highest general average in examination. To Ardrey Whiddin Downs.

The Prize of an Antiseptic Minor Operating Case, offered by the Clinical Professor of Orthopedic Surgery, for the best practical work in Orthopedic Surgery, or for the best report of his Clinic, or for an acceptable original design in Apparatus. To William Drayton, Jr.

The Prize of an Obstetrical Forceps, offered by the Professor of Obstetrics, to the member of the Graduating Class who furnishes the best report of a case of Obstetrics occurring in the University Maternity Hospital. To William Garfield Fox.

The Frederick A. Packard Prize of One Hundred Dollars, offered by a friend of the University to the member of the Graduating Class who has proven himself to be the most proficient in the course in Clinical Medicine. To Floyd Elwood Keene.

In the Department of Veterinary Medicine.

The J. B. Lippincott Prize of one hundred dollars, awarded to the member of the Graduating Class who, in the three years spent in the Veterinary Department of the University, attains the highest general average in examinations. To Charles Emery Stewart.

A prize of an Ecraseur, offered by a friend of the Department to the member of the Second-year Class who passes the best examinations in Veterinary Anatomy. To Oscar Nelson.

GRADUATION SERMON

(AN ABSTRACT)

By the Rev. William C. Richardson

Preached before the Graduating Classes of 1904, in St. James's Church, Philadelphia, Sunday, June 12, 1904.

The text was taken from the song of Zacharias, when his child, the Prophet John, was admitted into the full fellowship of the Jewish Church: "And thou, child, shalt be called the prophet of the highest, for thou shalt go before the face of the Lord to prepare His ways."

This was taken from a fragment of ancient Semitic literature. It was the cry of joy from a father's heart, as the conviction grew upon him that the age-long expectation of the coming Messiah was to be heralded by his own son. It was at the same time not so much a religious as a political prediction. The Messiah was to save Israel from her enemies, and these were summed up not so much in the temptations of the flesh as in the power of Rome that had enslaved her. It was again a vision of the last but one of the long line of prophets, not merely Jewish, but universal. John is the last. Zacharias comes next before him. Then was to come the fulfilment of the hope of mankind, not merely of David, but of Vergil, of Plato as well as of Solomon, of all the prophets "which have been since the world began." The child thus heralded is a type of the universal prophetship of man. When we take this out into the general field we say that one thing indispensable to a prophet is freedom. He who represents, stands for another, must be free. But it is freedom through the possession of truth. Then what is truth? Truth may be called the highest idea—the most nearly perfect mental picture of any particular thing, like the table Plato's carpenter had in mind before he made it. But this is not enough. Truth is the highest idea of the highest thing. And then we make a short cut through all human interests to human character. But it is a matter subjective as well as objective. It is the highest idea of the highest thing of which the highest mind can think. And then we arrive at the mind of God. He who secures

the view of human character held by God has the truth. God shows this truth in the person of Jesus of Nazareth. The man who apprehends Him is free from all small ideas of character, and, standing for that highest character, is a prophet ready to prepare the ways of the Lord. But all this is, one might say, a play upon absolute and relative values. We assume, theoretically, that everything has an absolute value—it is worth so much. But we know the absolute, if there be such a thing, only through the relative. We know anything or any person only through the relation of that thing or that person.

Gravitation—we call it a valuable force—it amounts to something—it is worth something. This is dealing in equivalents. But equivalents mean relations. We cannot set the idea of gravitation off by itself in some abstract world. The force brings down the mountain torrent through its chiseled gorge—and holds the mountain lake as still as death. Thus we know what it can do—we get at the truth about it.

Men dig up in the mud of the Nile and the tombs of Egypt coins, domestic implements, records of business transactions. This is a satisfaction to their scholarly inclination. But to enter into the truth about archaeology is to go beyond this and see the bearing of all these upon the life of the present world. A chemist gets the truth about various elements from his analytical processes. He puts together the present world. He is a prophet of chemistry thus far. But he must get the highest if he would most truly fulfill this prophetship. Chemistry must mean for him the putting together of the universe as well as of the world. It is exactly so with the idea of God. If any idea can be said or assumed to have an absolute value it must be this. But when we examine it, it obeys the general law. We must say that the absolute value of God must, in the very nature of things, lie in His own self-consciousness. But that is so abstract for us as to have no practical value at all. We know God only relatively. God's value to us is only when He comes into relation—into touch with us. And here the doctrine of the Incarnation ceases to be a mere badge of some distinctive body of thinkers, and rises to a level of a necessary truth. The highest idea of the highest thing—human character—of which the highest mind—God's—can think, must be seen and heard and touched—must make itself known in the only way in which man can know it: by living amongst

men, and thus "the Word became flesh and dwelt amongst us, and we beheld His glory, the glory as of the only begotten Son of the Father, full of grace and truth." The man who gets this is forever free from low ideas of living. He has found the absolute value of God, and entered into his rights as a prophet of the highest. His own living will thenceforth prepare the way of the Lord.

This, therefore, brings us to the practical value of the prophet in common life. I say "common life" with a purpose. The university is an epitome of the common life. It is a co-relation of specialties. It includes all the diverse interests of man. Juvenal's saying is its rightful motto: *Nihil humani a me alienum puto.* Every man in it is a prophet in his own specialty, whether officer, teacher or student, just in proportion as he grasps the full truth about that specialty. But every specialty leads to character because it involves in the doing of duty the matter of conscience. Therefore, every man becomes a prophet of some kind of character, and may be the prophet of the highest if he will. The result of his work—his total education looked upon as something put into him and something developed out of him—he may bring to bear upon society, and business, and politics, to make men more sane, more honest and more truly public-spirited. His prophetship will depend upon one thing, which in His inimitable teaching Jesus set forth with startling and unexpected force. It is in the picture of the Lord coming home from the wedding to find His servants waiting and watching—but girding Himself only to serve them. The universal prophetship of man becomes the prophetship of the universal man, and this ought to be peculiarly the opportunity of the university man. The reward in its fullness lies beyond. An English poet draws its picture. It is the table in the next world, where many who have stood for God in this life are not afraid to stand before Him there.

"Then cometh the Good Lord God,
Master of every trade,
And telleth them tales of Creation,
Of Edens newly made;
And they rise to their feet as He passes by,
Gentlemen, unafraid."

COMMENCEMENT ORATION

By the Rev. David M. Steele

Mr. Provost, Members of the Graduating Class, Ladies and Gentlemen:

For the honor of standing in your presence here to-day—which in very truth I count an honor—I can only say: I thank you. On the honor you have won for yourselves by completing your respective courses—which completion this day marks—I congratulate you. And in that future course which shall be yours—that life-long course of life-work, of which this day marks the "commencement"—from my very heart I wish you well.

But now, having thus made my bow to you, and that in those three stereotyped expressions which long usage has rendered so classic at such times as this, I confess my inability to proceed one step farther in fit phraseology. I cannot speak to you in phrases adequate to this occasion. No man ever can. There are no phrases adequate. And yet, I must speak. If I were dumb I would be driven to it; any man would be. If one could stand in the midst of this circle, here, and look into your faces, there; could estimate the labor that has led you to this day and the possibilities before you from this day; could reckon what this institution has done for you and what you are now prepared to do in consequence; if he could think upon the institution itself—the dignity of its age, the splendor of its equipment, the wealth of its endowment, the ability of its Faculty, the zeal of its Provost, and the personnel of its students—if any man, I say, could be so dead of heart that he could do all this and yet stand here and hold his peace, I think the very stones would cry out: Great is the University of Pennsylvania, and you, sirs, are its prophets!

But of what shall I speak? In casting about for a theme I have happened upon two things from which jointly has come a suggestion. The first is a copy of your annual Catalogue. On one page of that Catalogue I find a geographical summary of students. And, in that summary, I find this that strikes me with amazement: the unusually wide range of places from which you have come. I note that there are 2,700 of you, and that you have come, literally, from all corners of the earth. You are

here not only—scarce half even—from the State of Pennsylvania, but from almost every State in the Union; from Connecticut and from California; from Delaware and from Dakota; from Massachusetts and from Minnesota; from Tennessee and from Texas. You are here also from almost every foreign land of any dignity; from Austria and from Mexico; from Bulgaria and from Brazil; from Spain, Sweden, Syria; from Germany and from Russia. Aye, too, and from the islands of the sea you've come; from Australia and New Zealand; from the East Indies and the West; from Costa Rica, Porto Rico, Cuba; from Honduras and Japan. That is one thing that impresses me.

But I have happened on another volume. On one page of it I find a "Roster of Alumni." And in that roster also something strikes me with amazement; it is the correspondingly limited range of the district into which you will separate. I notice that comparatively few of those graduates who came from abroad have gone back whence they came. They seem to have eaten the lotus-food of something here which holds them on. All have scattered: so will you; but the limits of their hegiras are the bounds of this one country. They have studied many subjects and have gone forth to do various things. So of you. You have pursued courses in Arts, Science, Literature, Law, Medicine, Mechanics. You will go forth to labor, to study, to speak and to write; to make fresh discoveries in laboratories, to add new volumes to libraries, to try novel cases in courts, to fight fevers, build bridges and run railroads; but you will do these things mainly in America. My thought, therefore, is of you as choice university men about to become a single nation's leading citizens.

Unfolding this thought, let me try to do something like this: to trace first, in a single paragraph, the history by epochs of the geographical enlargement of this country. Next, let me rehearse, also in a paragraph, the names of those few men who were responsible for this—men who took a prophetic view of their country's possibilities. Let me try, in a third paragraph, to show how the fortunes of this country are, in this generation especially, being committed in trust to those who happen to be the young men of this generation, and, because of their especial ability, especially to university men. And, lastly, let me try to make real to you the burden of a few specific duties that devolve on you—you who

have a kingship each for an inheritance, and duties, too, commensurate; you, university men, going forth into this, a most wonderful country, in this, a most wonderful century—Heirs Apparent of a Nation.

First, will you listen to the story of that growth? I would not offend your pride, nor yet insult your teachers, by presenting this to your study as new history. You know it already. I would but rehearse it. You know that the territory of the Thirteen Colonies, embraced under the Federal Constitution at the date of that Constitution's adoption in 1783, was a narrow, crooked little strip of land, the width of which was the distance only from the Eastern seaboard to the Appalachian chain. You know that the main additions to this have been, roughly speaking, six. You know that the first of these was by the Ordinance of 1787, that ordinance which amounted virtually to a secondary constitution, by which the several colonies ceded to the Federal Government the Northwest Territory—that triangular territory lying between the Ohio, the Great Lakes and the Mississippi River, comprising to-day the States of Ohio, Indiana, Illinois, Michigan and Wisconsin. You know that, in 1803, the purchase was made, for $15,000,000, of that 900,000 square miles of land which, by the Treaty of Paris, in 1763, France had given to Spain, but which by the secret Treaty of Ildefonso, in 1801, Spain had given back to France; and which, because it offered a menace to his plans at home, Napoleon was willing to deed to us "forever and in full sovereignty," that vast territory stretching from the Mississippi River to the crest of the Rocky Mountains, and from the Gulf of Mexico to the border line of Canada—a territory as large as England, Ireland, Scotland, France, Spain, Germany, the Netherlands, Italy and Switzerland all combined. You know that, in 1819, the trouble which had arisen a few years earlier from certain vigorous proceedings on the part of American citizens in the Southern Peninsula, where the Spaniards either could not or would not keep the Seminoles in order, was adjusted by the purchase of Florida from Spain for $5,000,000—that tract extending off southeast which some one of his day prophetically called: "The Index Forefinger of the Continent beckoning Cuba." You know that, in 1845, Texas was annexed, it having achieved its independence in the defeat of Santa Anna, in 1836, and having continued thereafter in separate civic entity as "The Lone Star

State." You know that, in 1846, Oregon, although held by us conjointly with Great Britain ever since 1818, had its boundary line determined by treaty with England—that land projected on a scale commensurate in size with its own "winds, rivers, mountains and forests." And you know that, in 1848, California, upon the concluding of peace with Mexico, was had by us for an indemnity of $15,000,000.

You know, too, of course, how that such a rapid unrolling of such an enormous scroll would naturally leave certain creases in the map to be uncrumpled, and certain sharp corners and crooked edges to be clipped and straightened. And you know the ways in which this was done, where and when and why and by whom. You know how that, in 1814, the famous "We have met the enemy . . ." incident on Lake Erie, and the repulse of England's veterans of Napoleonic battles at New Orleans, together resulted in the Treaty of Ghent—that treaty which fixed the pole of the map permanently at the Lakes and let it drop straight to the Gulf. You know of the buying in of Connecticut's Western Reserve territory; of the work of the corps of Government surveyors, organized in 1785, in running base-lines, ranges and townships; of the settlement, in 1846, of the "Fifty-four Forty or Fight" controversy by drawing the forty-ninth parallel; of the Ashburton Treaty, in 1842, the Palo Alto incident in '46, and the Gadsden Purchase in '53. But these are mere details. The main steps were those six. When once empire had arisen where the sun descends, and had started westward, it stepped, as with the seven-league boots of Poseidon, first to the Alleghanies, then to the Ohio, then to the Mississippi, then to the Rockies, then to the Sierra Nevadas, and then to the coast. It was a development unparalleled in all human annals, resulting in a nation of colossal proportions, but still a nation; a plural unit with one constitution, one race, one language, one law, one liberty, one aim and one destiny.

But all this did not do itself. Therefore, I would rehearse to you, as in a second group, the names of the men who did it. They were men truly possessed of second sight and that of extraordinary quality. Their greatness appears greatest to-day just in proportion as they stood out in opposition to their own contemporaries. For they not only saw far ahead of their time, but they had to contend for their vision. For example, in 1780, in

a discussion of the Question of the Public Lands, Lord Hillsborough scouted the idea that there would ever be salable land "at the back of Virginia." It was Thomas Paine who was, strangely enough, among the prophets, who replied: "Sir, I tell you that the map-makers may as well sharpen their tools; for there is going to be work for them to do." I would remind you how, in contrast to those at home who deprecated the proceeding, there stands out the splendid diplomacy of Benjamin Franklin, John Jay and John Adams, our negotiators abroad, in securing for us that imperial domain, the Northwest Territory, when the treaty with Great Britain was drawn in 1783. I would remind you how, when Talleyrand urged upon Spain the relinquishment of Louisiana and Florida, proposing to make of them "a wall forever impenetrable to the combined efforts of England and America," Thomas Jefferson saw in their possession a chance for the ascendancy of the Anglo-Saxon race on the Western Hemisphere. When he began by seeking merely a shipping port, there were those who objected to his paying even $2,000,000 for it. But he saw ". . . in that 'Mobile Country' a commercial entrepot for all the commodities of the exterior. . . ." When he asked for this single port and had an empire thrust upon him, such men as White and Pickering and Tracy objected, with one voice, in public debate in the Senate, to "the payment of $15,000,000 for a wilderness." But he saw that the Mississippi River ought to be controlled throughout its entire length by one nation, and that the land along its course was worth at least two and a half cents an acre. He saw, too, that to delay would be to put the whole acquisition to hazard; so he bought it, on his own responsibility, even though to do so he had to desert his own strict constructionist theory, and venture upon an exercise of power as bold as Hamilton's assumption of state debts.

This step was so important that the following four seem now to be only the natural corollaries of it. But think of the opposition these met, step by step; of the narrowness of view of all those who opposed these subsequent additions, and of the keener foresight of the few who urged them. For example, in 1825, Mr. Smyth, of Virginia, declared in the House of Representatives that the limits of the Federation could not safely be extended beyond "those stony mountains;" he would not object to one or two tiers of states beyond the Mississippi, but no further.

Others following him agreed with him. But, while some were prophesying that the East would be depopulated by emigration to free farms, and while others were becoming terrified lest mere extent of territory would rend the republic apart and set up separate nations, it was Andrew Jackson, the first American citizen who ever crossed the Alleghanies to take his seat in the White House, who saw that the very lust of empire was the one thing that would hold those states together. Again when, later, Mr. Dickinson, of New Jersey, was pronouncing the idea absurd that Oregon could ever be of use, his argument being that it would take thirteen months—more than a year—merely to travel from there to Washington to sit in an annual session of Congress; and while one, Senator MacDuffe, of South Carolina, was standing on the floor of the Senate, publicly "thanking Almighty God that He had at least placed the Rocky Mountains where they were to prevent foolhardy venturers from ever going farther," Shaw and Parkman were crossing "the Oregon Trail." It was, in large measure, the report which they brought back of what they had seen there, that enthused Daniel Webster to urge the retention of that land against Great Britain's claims, and saved to us from her the whole Pacific Slope.

And as there were incidental facts above, so here. To make this list complete, one would have to call the honor roll of a long list of minor statesmen. He would have to speak of the wholesome influence of Albert Gallatin and Fisher Ames in producing a broad outlook early; of the part of Pinckney and Nathan Dare in drawing their famous "Ordinance;" of Madison's work as Secretary of State, and of Hamilton's service, when Secretary of the Treasury, in construing the Elastic Clause of the Constitution; of the finesse of Monroe in dealing with Marbois; of Livingston in dealing with Talleyrand; of John Quincy Adams' controversy with the Duke of Richelieu; of the part of Calhoun and Benton; of all those, in fact, who were bold enough to bid farewell forever to the idea of Montesquieu that "a republic can exist only in a small territory."

And there were others of a wholly different class. The fact is that, in the eye of history, statesmen and diplomatists often usurp more than their proper share of compliment. In reality they only bring to a conclusion movements started by adventurous spirits before them. I would pause to pay a tribute to

all those—adventurers, discoverers, explorers, settlers—those who cut the trails across the continent and set up stakes which others reached forth to, and by which they drew themselves on. I have in mind the work of Daniel Boone, who, in going to Kentucky, in 1769, was the first man who ever led a body of settlers to establish a community completely cut off from the seaboard colonies. I am thinking of General Rufus Putnam, who crossed the Ohio in 1788, and who, in believing that others would follow, was as bold in his faith as Columbus the day he put forth from Palos. I have in mind George Rogers Clarke's conquest of the Illinois, in 1778—the young explorer sent out by Patrick Henry, then Governor of Virginia. I am thinking of Zebulon Montgomery Pike, who, in 1805, reached the source of the Mississippi, settled there and became the precursor of the famous Rocky Mountain Men. And of course I am thinking of the expedition of Lewis and Clark, sent out by Jefferson in 1804 to explore Oregon, which exploration formed a strong link in our claim to that land later: while time would fail me to tell of Hamilton and Robertson; of Isaac Shelby and Simeon Kenton; of John Sevier and Anthony Wayne, and of their valor at Marietta and Vincennes, at Muskingum and the Great Kanawha, at King's Mountain and the Fallen Timbers. Nor would time alone, but words, fail me to tell of those who followed these: the great deeds done in the conquest of the wilderness by that race of restless and intrepid pioneers who, with the gunsmith and the saddler for their only outfitters; with the sun for their only companion by day and the sky for their tent by night; with instinct for a guide and high hope for a canopy, moved westward, ever westward, fighting climate and disease, the wild beasts of the forest and its wilder human denizens; who drove that enemy—the frontier—from one ocean clear to the other, until to-day they have set looms and anvils in the haunts and lairs of beasts, until cities are reared in the bosom of solitude itself, and quarter-sections staked for sale above old Indian graves.

And there were other factors still—commercial factors—in producing this great change. On that day, in 1806, when Pike sighted that giant peak which has served as a magnet to draw adventurous spirits ever since; on that day, in 1848, when James Marshall picked up that pebble in the race-way of Sutter's Mill on the American Fork of the Sacramento, a discovery which set

up such a peaceful migration as the world had never seen; on that day when Fairweather and Edgar made their strike in Alder Gulch, the thing that put Montana on the map; on that day, in 1869, when the rails of the Union and Central Pacific Railroads met at Promontory Point, completing the first of those mighty highways that have quickened every movement of commercial enterprise and social intercourse: there and then, on those days and in those places, was history made. The whole is a long story, but it is full of charm; for it is the story of those who went forth in faith. Through faith these subdued kingdoms, they wrought righteousness, they quenched the violence of fire, escaped the edge of the sword, out of weakness were made strong, waxed valiant in fight, put to flight the armies of the aliens—which things declare plainly that they sought a country. They sought it and they found it.

There it is, gentlemen. Look at it—your country. From the Atlantic to the Pacific, from the Lakes, those mighty inland seas, to the Gulf, itself a minor ocean; and from the farthest bourne "where rolls the Oregon" to that other corner borderland where "scratches don't count, in Texas, down by the Rio Grande," the map is an integer. In form it surpasses the original conception as the bending sky surpasses in majesty the clouds that drift beneath it. In size it has three and a half or more million square miles, an area surpassing that of Rome in the period of its greatest grandeur; aye, greater than all the walks, the private arbors and new-planted orchards on this side Tiber. There it is. And it is yours; yours by inheritance; left to you by those who sighted, settled, planned, projected—to you as to their heirs forever. What a heritage!

But, softly, now. For here we have come to the point—that point to which the others all are auxiliary. Bequeathed? . . . . by those before you? . . . . who were great in that they could see things before they came to pass? Yes. But bequeathed for what? Mere common pleasure-grounds in which to walk abroad and recreate yourselves? Ah, that's the point. It is bequeathed in trust. Your country's very greatness, therefore, ought to excite more anxiety than pride. It is at the price of such solicitude alone that you can have the legacy. For this legacy is of such a kind that it is given simply to those who can receive it. There are certain things that must be done. They

must be done by those who are most fit to do them. And the persons thus best fitted, by accident and training, would seem to be you—university men. The things to be done are not the same in kind as those that have been done; they are full as important. Not yours is it to do the same things those before you did, but to make what they did worth doing. To be specific, I can think of three things you must do, or, rather, be; three views that you must take of the situation that confronts you; three points of view, that is, from which you must regard your heritage in order to inherit it.

First, I would urge you to take a large view of your country's possibilities; to be credulous of its future. While this continent was unknown, imagination peopled it with strange creatures and filled it with a wealth immeasurable. It was "the Orient;" in it were Elixir and the Philosopher's Stone; El Dorado, Coronado, Bonanza, Cibola, and the Seven Cities. Now that it has been explored, the facts outrun all former fancies. Its size, its wealth, its growth are fairly fabulous. Its area, doubled and quadrupled many times; its population, multiplied one hundred fold in just about one hundred years; its national wealth of full a hundred billion dollars—why, these things put the legends of mythology to shame. Regarding details here, if this were the time and place to quote you figures one could make you blind. But this is not my purpose. What I would remind you of is this: that it is a peculiarity of men who live in any age of wonders always to think that wonders cease with them. The corrective of this, in your case, lies in realizing how brief has been the period in which this great development has come; how great is the impetus with which that development is at this moment moving on, and how wide are the fields, and how rich the resources yet unsettled and undeveloped. When you realize that your population of eighty millions can become eight hundred millions without crowding; that not only two, but a hundred blades of grass can be made to grow for every one now growing; and that increase of wealth and power just seems to have no limits, then

> "Oh, my friends! Thank your God, if you have one, that He
> 'Twixt the Old World and you fixed the gulf of a sea.
> Be strong-backed, brown-handed, upright as your pines,
> And by the scale of a hemisphere shape your designs."

Secondly, I beg you to take a balanced view; to avoid provincialism. Mr. Emerson once remarked: "I call him a great man who has only to open his eyes to see things in a clear light, in right relation and in due perspective." This is certainly a mark of greatness; but it is a mark about as rare in possession as it is distinctive in quality. Not to see things thus is to be provincial. And it is to be feared that of such provincialism these Eastern States of ours, especially their cities, are most full. At the celebration of the Fiftieth Anniversary of the Pacific University in Oregon a year or so ago the orator of the day startled the press of the country by declaring that: "After all, it is the residents of the Far East who are provincial, and those of the Far West who are really cosmopolitan." In large measure he was right. Provincialism is not a thing, but a way of looking at things. Cosmopolitanism is not a manner of wearing clothes or of pronouncing "R," but a recognition of the fact that other persons elsewhere may have qualities which, though different from one's own, are just as valuable. In that sense the "Big Four Eastern Seaboard Cities" are the most provincial places in the country. In each of them, as you know, there is a class of persons who deck themselves with complacency as with a garment; stay at home, or, if they travel, go abroad; know their London as a Londoner knows his Paris, but know practically nothing of their own country. Knowing nothing of it, they think of it and its people as, at best, big, but ungainly; alert, but uncultured; self-conscious, but not self-contained; honest and manly in a way, but utterly vulgar. The only cure for this is in the facts. And the only way to get these facts is to travel. There is no other way to gain any conception of the size of this country, the wealth of its resources, the variety of its products and the virility and versatility of its people so effectual as to ride across it and look at it from a car window. Do this. By all means do it. You will find some things that will surprise you. You will find expanses of fertile land vaster and more vast than the wastes that Mazeppa rode over. You will find mountains in which, as in treasure houses, there are stored riches beyond human compare. You will find "rivers as wide as your lordly Delaware is long." You will find that tract of 67,000,000 acres—one mighty farm—between the Mississippi and the Rocky Mountains, yielding agricultural products to the value of one thousand

million dollars a year, and live stock worth as many millions more. You will find the land which Napoleon hoped to make feed little San Domingo now become the garden of the continent, the undisputed granary of the world. You will note how the transcontinental railways, with their 37,000 miles of lines, have bridged magnificent distances, have abolished the wilderness, are sweeping Pike's and Long's Great American Desert off the map, and are drawing the valleys of the Columbia and the Sacramento into the circle of the world's activities and interests. You will find, too, how seaports from San Diego to Seattle are drawing the centre of the country's population, which in 1789 was twenty-five miles east of Baltimore, steadily westward with a rate almost as uniform as the precession of the equinoxes, until it will soon have moved half-way from New York harbor and the Golden Gate. Do you realize at all what is going on out there? Do you realize how rapidly things are changing, or how far that change has gone already? Do you realize that the population of a half a dozen Western States has practically doubled in a dozen years? Do you know that one of the so-called "Garden Counties" of the country is in the erstwhile desert of the State of Utah? Do you know that the fourth State to-day, in order of population, is the State of Texas? Do you know that in the matter of material structure and physical environment those Western cities, St. Paul, Minneapolis, Denver, Salt Lake, Tacoma, Seattle and Portland, are more beautiful than any group of cities of the same size in the Eastern States, and that they are the homes of the most highly developed manufacturing activities, as well? Or, in other matters, do you know that in point of freedom from crime the list of American towns is headed by one in Kansas; that in freedom from illiteracy is headed by one in Nebraska? Do you know that the plans of Denver's High School buildings have been copied for use in the construction of university buildings in Berlin? Do you know that the late Charles A. Dana pronounced Mr. Harvey Scott, of the Portland *Oregonian*, "one of the greatest three American editors?" Do you recall that, with one exception, every President elected since Buchanan—Lincoln, Grant, Hayes, Garfield, Harrison and McKinley—have come from the Mississippi Valley? Gentlemen! Gentlemen! It is a narrowness of vision which fails to see that there are wealth and wisdom, aye, and qualities of manhood quite as vast and quite as vital in the

West as in the East. Denial of this or ignorance of it is provincialism which out-islands Kipling's "Islanders." I pray you, avoid it.

In the third place, I beg you to take what I can call by no better name than a fair view. Perhaps I can best make plain to you what I mean by quoting Cromwell's famous exhortation to his troops: "I beseech you, brethren, by the tender mercies of the Lord, that ye conceive it possible that sometimes even ye might be mistaken." I am moved to plead this point because of the way to-day so many men seem prone to approve, on the other hand, Decatur's famous sentiment: "My country, right or wrong." It is possible that at times your country may be wrong. There have been times when it has been wrong. It is the part of greatness at such times to see this and to admit it. There have been such times in every country, and the great men of every land have been those who were great enough to see this and confess it. Did not such patriots as Burke and Chatham protest against the war of England with her American Colonies? Did not Lord Salisbury say that: "In going into the Crimean War for the support of Turkish despotism, England put her money on the wrong horse?" Did not such men as Mr. Morley, Mr. Bryce and Sir William Vernon Harcourt protest against the recent South African War, deprecating its origin and criticising its course? And did not all the best men in the United States, including Mr. Lincoln, protest throughout against our war with Mexico? I beg you, take a fair view. You can do this only by studying your country's history. And, in that study, you must go to original sources—to documents and state papers. Do this. Do it with a desire, not to justify your country's actions, but to weigh them. Thus, and thus only, will you avoid Dr. Johnson's opprobrium: "Patriotism? The last refuge of a scoundrel."

Bear with me one moment more. In exactly the same way that the course of empire, having trod thus rapidly across a continent, seems to have found itself unable to stop, even at the ocean, but has hesitated on that ocean's brink and had to set one foot across, so, borne on by the very momentum of my theme, I cannot stop here. I must follow one step further. In addition to the three I have cited, there is one other element of manhood you must have if you are to emulate those who have bequeathed all this to you. Let me put it bluntly thus: In addition to being

credulous, well-balanced and fair-minded, you must be good. Apart from all cant speech concerning it, and in spite of much hypocrisy and insincerity, the old, old proverb still is true that: "Righteousness exalteth a nation; but sin is a reproach to any people." There was a man sent from God whose name was George Washington. From his "Farewell Address" we recall these words: "Whatever may be conceded of the influence of refined education on minds of a peculiar structure, Reason and Experience both do teach that, of all the dispositions and habits which lead to political prosperity, Religion and Morality are its indispensable supports."

Of course, if I were to pause here, I would have to raise the whole question of Expansion—of Imperialism. I do not mean to pause that long, but merely to say this: you remember the Oracle said, "All things have two handles. Beware the wrong one." They who hold the wrong handle here are those "men of corrupt minds and destitute of the truth, supposing that gain is godliness. From such withdraw thyself." It is true that we have precedent for appending conquered territory; but it must be done for the right reason and not for the wrong one. It is true that you are the heirs of the traditions and fortunes not only of a continent-conquering but of a world-mastering race. It was your ancestors who, eighteen centuries ago, in the Teutonberg Forests under Armenius, destroyed Varus and his army and drove the Romans out of Germany. It was the descendants of Rome's conquerors—the Angles, Saxons and Jutes—who in the fifth century landed in England and drove out the Celts. It was those victors' descendants who landed at Jamestown and Plymouth, in the seventeenth century, exterminated the Indians or brushed them out of their path, held the Spaniards at bay at the South, helped England to drive the French out of Canada, and then drove England out. It is true that, since that day, their march has continued, without retreat or reverse—majestic, tremendous, triumphant—westward. Incidentally, it is true that new-created wealth has flowed back in currents that have enriched those Eastern States which in the beginning constituted this nation; but only incidentally. For what has made this nation great has never been acquiring territory for itself, but for the sake of civilization and in the interest of humanity. Will this go on? That depends upon you. We have happened upon stirring times.

Strange things are happening. New nations are awakening. An awakened nation always moves. Heretofore it always has moved westward; it might move eastward. There are certain ugly things happening at home—in politics, in finance, in society. That significant setting aside recently of the rule *De mortuis nil nisi bonum*—this has lifted the lid off a condition of things simply horrible. The collapse of certain great industrial corporations recently—these have rendered a child's toy, by comparison, the Mississippi Bubble. Two pitched battles yonder on the hills of Cripple Creek—these have in them the elements of a French Revolution. If there is in sight a "Yellow Peril," it is because of things like these that it appears. The peril is not that Mongolian races may possibly overrun Caucasian lands—that has happened before in history. It is in the possible triumph of a lower civilization over a higher one, and that because the guardians of the stronger have allowed it to sink and become the weaker. Just so surely as this whole round world is bound with golden chains about the feet of God, so surely is the measure of a nation's strength the measure of that nation's virtue. And just so surely as, by a simple principle of hydrostatics, the water in a single test-tube measures the pressure of that in the entire ocean, so individual morality is always the measure of national morality.

> "The stake is laid, O gallant youth with yet unsilvered brow!
> If Heaven should lose and Hell should win,
> On whom shall be the mortal sin
> That wails at last: 'It might have been'?"—

On whom if not on you—choice university men, going forth into this most wonderful country, in this most wonderful century—you, a noble nation's Heirs Apparent?

PRESENTATIONS FOR HONORARY DEGREES

By the Public Orator, Walter George Smith, Esq.

Mr. Provost, Ladies and Gentlemen:

Although the University of Pennsylvania embraces among its departments no school of divinity, it has been its custom to recognize learning in this the highest of human studies by the conferring of honorary degrees upon those who in a special manner have illustrated in their lives and studies their worthiness for

academic distinction. We have with us to-day a gentleman whose church has called him to one of the greatest of its honors and responsibilities. His personal qualities, scholarship, learning and piety, his long residence in this community as rector of one of its most ancient churches, have led the Trustees to select him for that degree which marks his calling. On his departure for a new and enlarged sphere of action, it has been thought appropriate that this seat of learning should mark its estimation of his character and attainments, and I am instructed, therefore, to present to you for the degree of DOCTOR OF SACRED THEOLOGY the Right Reverend RICHARD HENRY NELSON, Bishop Coadjutor of the Diocese of Albany.

Among the distinguished men of science who have honored us by their presence at the opening of the new Medical Laboratory is he who holds the position of Director of the Sheffield Scientific School of Yale University. His life has been filled with achievements in the realm of exact knowledge, especially in the field of physiological chemistry. Both by the works of his pen and by his oral lectures he has made for himself an eminent place among men of learning. The Trustees of this University have instructed me to present to you RUSSELL HENRY CHITTENDEN for the honorary degree of DOCTOR OF SCIENCE.

The University of Michigan sends us its greetings upon the dedication of one of the most important additions to the Department of Medicine by a delegate who is especially welcome, as being one of our own graduates who has carried the lamp of his learning with an undiminished light far from his native State and Alma Mater, to shed its rays in that new and prosperous community of students. The Trustees have felt a special satisfaction in having it in their power to testify their appreciation of his earnest work for the advancement of medical knowledge by tendering to GEORGE DOCK, Professor of the Theory and Practice of Medicine in the University of Michigan, the honorary degree of DOCTOR OF SCIENCE; and by their authority I now have the honor to ask that it be conferred by your hands.

Harvard University, the most venerable of institutions of learning in the American Republic, the Alma Mater of hosts of

illustrious scholars, both living and dead, has shown for many years her friendship for the University of Pennsylvania and her wish for its prosperity. She is represented at this Commencement by an eminent teacher of medicine, a man whose achievements have been recognized by universities abroad as well as at home. The Trustees of our University have felt its honors may well be conferred upon so profound a student; and, joining in the judgment pronounced upon his attainments by the Universities of Edinburgh and of Cambridge, they have instructed me to present to you for the honorary degree of Doctor of Laws, Henry Pickering Bowditch, Professor of Physiology in Harvard University.

The candidate whom I now have the honor to present, Mr. Provost, has peculiar claims upon our admiration and regard. Born in Philadelphia, a graduate of our University, his whole manhood has been closely identified with its Department of Medicine—that department upon which for many years its greatest reputation rested, and which we may well hope has the most prosperous future before it. His earnest, brave, cordial bearing, his great learning, his devotion to the science to which he has given his life—all these reasons unite to make it a pleasure as it is a duty to present Horatio Curtis Wood, Professor of Materia Medica in the University of Pennsylvania, for the honorary degree of Doctor of Laws.

Among the surgeons who have won the first eminence in the profession throughout the world is the candidate whom I now desire to present to you. Because of his services to the profession of medicine, as an author, teacher, operator and investigator, he has shown himself worthy of the highest honors that could be conferred upon him by any professional school, while the broad humanity shown by him in abandoning his private interests to serve on the battlefield and in the hospital; the skill shown during the critical illness of his king, whose life was saved by the accuracy of his judgment and decision in action, when, though the eyes of the world rested upon him, he had the courage to forget the sovereign and think only of the patient—these characteristics and achievements make it a special satisfaction to present

to you Sir Frederick Treves, Consulting Surgeon to the London Hospital, for the honorary degree of Doctor of Laws.

The ancient and illustrious people represented by the candidate I am about to present is bound by many ties of friendship to the United States. So long as history and tradition preserve the memory of the stirring events that led to the foundation of the American Republic, the emotions of every patriotic citizen of that republic should be moved by gratitude to Frenchmen and to France. And as the founder of the University of Pennsylvania—if to any individual may be given that credit—was for many years Ambassador of the infant American Republic to the ancient Kingdom of France, and the recipient of many honors from its people, it is especially fitting that the honors of that University should be conferred upon the Ambassador of the French Republic. But while these historical facts give a special pleasure, it is not alone because he is the French Ambassador, allied by the closest of personal ties to the American people, but because he is a scholar and an author who has won his place in the republic of letters, that the Trustees of the University of Pennsylvania have desired me to present Jean Adrien Antoine Jules Jusserand for the honorary degree of Doctor of Laws.

RECORD OF HIGHER DEGREES CONFERRED

Credentials of Candidates

The Faculty of Philosophy held its third formal session for the reception of the credentials of candidates for the higher degrees on Saturday, June 11, 1904, in the Chapel, College Hall, the Provost in the chair.

Eleven candidates for the degree of Master of Arts, and one for that of Master of Science, were presented to the Faculty by the Dean, who, in each case, read a brief sketch of the candidate's academic life, certifying that all the conditions prescribed by the statutes of the University and the rules of the department had been fulfilled, and recommending the candidates for the degrees of Master of Arts and Master of Science, respectively, as follows:

Master of Arts.

Benjamin Franklin Finkel, B. S. (Ohio Northern University, 1885).
Mathematics and Physics.

John Frazer, B. S. in Chemistry (Pennsylvania, 1903).
Chemistry.
Hyman Leo Grabosky, A. B. (Pennsylvania, 1902).
Latin and Greek.
Helen Theodore Kirk, A. B. (Bryn Mawr, 1892).
History, Political Science.
Charles Moore Magee, A. B. (Pennsylvania, 1895).
English.
Ethel Elizabeth Mudie, A. B. (Queen's University, 1899)
History, English.
Jacob Hartman Rohrbach, A. B. (Lafayette, 1887).
Pedagogy, Psychology.
Watson Bartemus Selvage, A. B. (St. Stephen's, 1898; Cornell, 1902).
English.
Louise Baird Wallace, A. B. (Mt. Holyoke, 1898).
Zoölogy.
Helen Augusta Wilder, B. S. (Minnesota, 1898).
English.
Mary Grier Willson, A. B. (Pennsylvania College for Women, 1903).
English.

Master of Science.

Paul Gerhardt Cressman, A. B. (Pennsylvania College, 1902).
Chemistry.

After the credentials had been read the candidates withdrew, and the Dean moved that the Faculty recommend to the Board of Trustees for the Master's degree the twelve persons whose credentials had been read. The Faculty unanimously voted "aye."

The eighteen candidates for the degree of Doctor of Philosophy were then brought before the Faculty individually. Each one was presented to the Faculty by a member of the Group Committee under whose jurisdiction he had taken his major subject. The presenter read a sketch of the candidate's academic life, and an outline of the scope and content of his thesis. In each case, after the credentials had been read, the Provost asked whether any member of the Faculty desired to make any inquiry of the candidate or of the presenter. The candidate then withdrew, and the presenter made a formal motion to the effect that the Faculty recommend the candidate to the Board of Trustees for the degree of Doctor of Philosophy. In each case the Faculty unanimously voted "aye."

Note.—The credentials submitted to the Faculty in behalf of the eighteen candidates above mentioned are appended in full.

It will be observed that the amount of resident work pursued by the candidate is expressed in terms of "standard courses." By this is meant the equivalent of one hour a week of lecture or seminary work for one year. All recommendations for the higher degrees must originate with the Group Committees under whose supervision the candidate has been pursuing his work. The Group Committee cannot recommend a candidate for the Master's degree who has not completed twelve standard courses, nor for the Doctor's degree one who has not completed twenty-four standard courses. The aim of this requirement is to ensure the candidate's having had in the first case at least one, and in the second at least two, full academic years of resident work as a foundation for the private reading and research which, more especially in the case of the Doctor's degree, constitutes the more important part of his work. But no student can acquire the right to claim of his Group Committee recommendation for a higher degree by formal compliance with prescribed conditions. The decision of the Group Committee is reached only after an exhaustive consideration of all questions relating to the candidate's fitness for the degree in question.

Presenter, Professor SMITH.

DONALD SINCLAIR ASHBROOK was born in Philadelphia, October 18, 1880. He received his early education at the Penn Charter School. He entered the course in Arts and Science of the College of the University of Pennsylvania in 1897. The following year he was transferred to the course in Chemistry, and received the degree of Bachelor of Science in Chemistry in 1902.

He entered the Department of Philosophy, September 15, 1902, electing his major in Electro-Chemistry, his minors in Organic and Inorganic Chemistry. He has devoted his entire time to graduate work for two undivided years. He was accepted as a candidate for the degree of Doctor of Philosophy, February 27, 1904. He has passed formal written examinations in his major and minor subjects at various dates between March 10 and May 23, 1904, under Professor Smith, Dr. Rogers, and Dr. Shinn.

He has presented a thesis entitled "Electrolytic Separations Possible with a Rotating Anode." The thesis is now in press. Its content may be outlined as follows:

A year ago, Mr. Exner, working in the John Harrison Laboratory of Chemistry, demonstrated that by using a high current and great pressure with a rotating anode, it was possible to determine fourteen metals in the electrolytic manner much more rapidly than had ever been done previously. There remained the question as to how far this procedure would lend itself to the separation of the several metals. This point became the guiding thought of the investigation. It was found possible to make nearly fifty separations, averaging in time about fifteen minutes, where previously anywhere from three to six hours was necessary.

Mr. Ashbrook has discharged all his financial obligations to the Uni-

versity, has satisfied all the formal requirements for the degree of Doctor of Philosophy, and is unanimously recommended to the Faculty for that degree.

EDGAR F. SMITH,
Chairman of Group Committee XIV.

WM. ROMAINE NEWBOLD,
Dean.

Presenter, Assistant Professor RICHARDS.

LLOYD BALDERSTON, JR., was born at Colora, Md., July 3, 1863. He graduated from the Friends' School at Westtown, Pa., in 1880. From 1885 to 1887 he was a teacher in the Friends' School at Barnesville, Ohio. From 1887 to 1891 he taught Mathematics and Science in Mrs. Head's School, Germantown, Pa. From 1891 to June, 1903, he taught Sciences and Mathematics at the Friends' Select School in Philadelphia.

He entered the Department of Philosophy, University of Pennsylvania, as a Special Student, September 26, 1896, and pursued work in Mathematics, Physics, and Chemistry for four years. At the close of the year 1899–1900 he withdrew from this University, and during the year 1900–1901 pursued work at Haverford College.

Mr. Balderston re-entered this department, October 24, 1901. At the beginning of the second term of that year, February, 1902, he was given standing in the Senior Class of the College, and received the degree of Bachelor of Science at the Commencement of 1902.

He entered the Department of Philosophy a third time on September 30, 1902, and the following year, 1903–1904, was appointed to the Frazer Fellowship in Physics.

He has received credit for twenty-six and one-half standard lecture courses in addition to the requirements for the Bachelor's degree.

He has passed formal written examinations in his major and minor subjects at various dates between April 22 and May 14, 1904, under the supervision of Professor Goodspeed, Professor Smith, Assistant Professors Richards, Fisher, and Schwatt. He has presented a thesis entitled "An Interference Method for the Determination of the Speed of Sound in Liquids," and has made a deposit satisfactory to the Executive Committee to guarantee its publication.

The aim of his investigation was to develop a laboratory method for the determination of the speed with which sound waves are propagated in liquids. If two trains of waves alike in pitch and intensity but opposite in phase be brought together, they interfere and silence results. Two sources of sound were provided by passing an interrupted current of electricity through two electro magnets, each of which was placed near to a thin iron diaphragm closing the end of a tube filled with water. The other ends of the tubes were joined at an acute angle. One of the tubes was of variable length. When the sources were both acting, the length of the adjustable tube was varied until the sound heard beyond the junction was a minimum. The difference in length of the tubes was now half

the wave length of the sound. The pitch being known, the speed of propagation was found in the usual way. In the concordance of its results the method compares favorably with the three other indirect methods which have been employed.

Mr. Balderston has discharged all his financial obligations to the University, has satisfied all the formal requirements for the degree of Doctor of Philosophy, and is unanimously recommended by the Executive Committee to the Faculty for that degree.

ARTHUR W. GOODSPEED,
Chairman of Group Committee XIII.

WM. ROMAINE NEWBOLD,
Dean.

Presenter, Professor SMITH.

HOWARD WINTER BRUBAKER was born at Waseon, Ohio, May 27, 1877. He received his early education in the public schools of Northfield, Minn., graduating from the High School in 1895.

He entered the Freshman Class of Carlton College in 1895, and received the degree of Bachelor of Science in 1899. For the three years 1899–1902 he taught Chemistry and Physics in the Lake City High School.

He entered the Department of Philosophy of the University of Pennsylvania, September 20, 1902, electing his major in Inorganic Chemistry, his minors in Organic and Analytic Chemistry.

He was accepted as a candidate for the degree of Doctor of Philosophy February 27, 1904. He has received credit for sixteen and one-half standard lecture courses and for an amount of laboratory work more than satisfactory to complete the minimum required for the degree of Doctor of Philosophy.

Mr. Brubaker has passed formal written examinations in his major and minor subjects at various dates between March 30 and May 10, 1904, under the supervision of Professor Smith, Dr. Rogers, and Dr. Shinn; and has presented a thesis entitled "Derivatives of Complex Inorganic Acids."

In this thesis he shows the methods by which he succeeded in producing eight new complex tungstates, determines for each its chemical formula, and its principal chemical property. The thesis is now in press.

Mr. Brubaker has discharged all his financial obligations to the University, has satisfied all the formal requirements for the degree of Doctor of Philosophy, and is unanimously recommended by the Executive Committee to the Faculty for that degree.

EDGAR F. SMITH,
Chairman of Group Committee XIV.

WM. ROMAINE NEWBOLD,
Dean.

Presenter, Professor MCMASTER.

ISAAC JOSLIN COX was born at West Creek, N. J., November 19, 1873. He received his early education at Kimball Union Academy,

Meriden, N. H., graduating in 1892, and in the same year he entered the Freshman Class of Dartmouth College, from which institution he received the degree of Bachelor of Arts in 1896.

During the six years following, 1896–1902, he taught Mathematics and Literature in the San Antonio Academy, San Antonio, Texas. From 1899 to 1902 he was Vice-Principal of that school. While engaged in this work he undertook the study of American History, with especial reference to the early history of San Antonio. He made a thorough search of the records preserved at San Antonio and at Austin, Texas, and in the summer of 1898 he went to the City of Mexico and examined those preserved in the Archivo General.

During the summer months of 1900, 1901, and 1902, he undertook graduate work in the Universities of Texas, Chicago, and Wisconsin.

He entered the Department of Philosophy of the University of Pennsylvania, September 23, 1902, as Harrison Fellow in American History, electing his major in American History, his minors in European History and Political Science. He was reappointed to this fellowship for the year 1903–1904.

He has received credit for twelve standard courses pursued in the Universities of Texas, Chicago, and Wisconsin, and for twenty-two and one-half standard courses pursued at this University, making a total of thirty-four and one-half standard courses.

He has passed at various dates between May 24 and June 9, 1902, formal written examinations in his major and minor subjects with Professors McMaster, Cheyney, and Rowe.

He has presented a thesis entitled "The Disputed Frontiers of the Louisiana Purchase," and has made a deposit satisfactory to the Executive Committee to guarantee its publication.

After reviewing the history of the Southwest under French and Spanish rule to the year 1803, Mr. Cox portrays the critical conditions existing along the Florida and Texas frontiers of the Louisiana Purchase after its delivery to the Americans. The danger of immediate hostilities in this quarter was finally removed by the Neutral Ground Agreement between the American General Wilkinson and the Spanish Lieutenant-Colonel Simon de Herrera.

Mr. Cox describes the attitude of the United States government towards the Louisiana boundary question, and relates the unsuccessful attempts to fix them by European negotiation.

Various filibustering expeditions finally secured to the United States the possession of West Florida, though not of Texas. The boundary question was settled by the Treaty of 1819, although two years elapsed after the conclusion of the negotiations in Washington and Madrid before public sentiment in the United States, and Spanish procrastination, permitted the final ratification of the treaty (1821).

Of these events Mr. Cox has given an exhaustive account, based in part upon his own investigations in the archives of Texas and Mexico.

Mr. Cox has discharged all his financial obligations to the University, has satisfied all the formal requirements for the degree of Doctor of

Philosophy, and is unanimously recommended by the Executive Committee to the Faculty for that degree.

JOHN B. MCMASTER,
Chairman of Group Committee IX.

WM. ROMAINE NEWBOLD,
Dean.

Presenter, Professor PATTEN.

WILLIAM BACKUS GUITTEAU was born at Toledo, Ohio, November 27, 1877. He received his early education in the public schools of Toledo, graduating from the High School in 1894. In the same year he entered the Freshman Class of the Ohio State University. The Sophomore year, 1895–1896, he spent at the University of Michigan, but returned to the Ohio State University and received the degree of Bachelor of Philosophy in 1897. The following year he studied in the Law School of the same University.

From 1898–1900 he taught English and Civics in the Toledo High School. In 1900 he was appointed Cornell Fellow in Political Science in Cornell University, and received from that institution the degree of Master of Arts in 1901. In the autumn of 1901 he resumed his position in the Toledo High School.

He entered the Department of Philosophy of the University of Pennsylvania, September 27, 1902, as Harrison Fellow in Political Science, electing his major in Political Science, and his minors in Economics and American History.

At the close of the year, having received credit for fourteen standard courses pursued at Cornell and eleven pursued at this University, making a total of twenty-five, he passed at various dates between May 1 and May 28, 1903, examinations in his major and minor subjects under Professors McMaster, Rowe, and Patten.

He was granted a leave of absence for the year 1903–1904, and returned to his work at the Toledo High School, but has prepared during the year and has submitted to his Group Committee a thesis entitled "Constitutional Limitations upon Special Legislation Concerning Municipalities." He has deposited a guarantee satisfactory to the Executive Committee for the publication of his thesis.

Mr. Guitteau gives an account of the origin, growth, and evils of special legislation; classifies under seven heads the chief types of constitutional limitations upon legislative control of municipalities, and briefly discusses each type, naming the states which have adopted such limitations.

He makes a detailed study of the attempts of Ohio and Pennsylvania, respectively, to prevent special municipal legislation, giving an account of the conventions which framed the constitutional limitations, of legislation under them, and especially of the legislative classification by which they were largely evaded.

He presents also the important decisions of the Supreme Court of

each state upon this subject. In his final chapter he shows that a solution of the problem of the proper means whereby the state may control municipalities may possibly be found: (1) in a clear distinction between the public or governmental, and private or proprietary functions of municipal corporations; (2) in granting to the municipality unrestricted control of its local functions; (3) in the establishment of a state municipal board as a means of controlling the municipality upon its public side, thus substituting administrative in place of the present legislative state control.

Mr. Guitteau has discharged all his financial obligations to the University, has satisfied all the formal requirements for the degree of Doctor of Philosophy, and is unanimously recommended by his Group Committees to the Faculty for that degree.

S. N. Patten,
Chairman of Group Committee X.

Wm. Romaine Newbold,
Dean.

Presenter, Professor Smith.

ROY DYKES HALL was born at Burnett Junction, Wis., September 18, 1879. After passing through the public schools of his native town, he graduated in 1896 from the High School of Horicon, Wis., entered in the same year the Freshman Class of the University of Wisconsin, and received the degree of Bachelor of Science in 1900.

The next two years, 1900–02, he spent at the University of Wisconsin as a graduate student in Chemistry and Mineralogy, and received the degree M. S. in 1902. He then entered the Department of Philosophy of the University of Pennsylvania, September 24, 1902, electing his major in Inorganic Chemistry, and his minors in Organic Chemistry and Electro-Chemistry.

He has received credit for eighteen standard courses pursued at the University of Wisconsin, and for nineteen lecture courses pursued at this University, making a total of thirty-seven courses, and has in addition completed a large amount of laboratory work for which formal credit has not been given.

Mr. Hall was admitted to candidacy for the degree of Doctor of Philosophy, February 27, 1904, and has passed formal written examinations in his major and minor subjects at various dates between March 10 and May 30, 1904, under Professor Smith, Dr. Rogers, and Dr. Shinn.

He has presented a thesis entitled "Observations on the Metallic Acids." The thesis is now in press.

The oxides of columbium and tantalum were obtained from 75 per cent of columbite.

The methods of purification of columbic oxide were studied with especial reference to the removal of the usual impurities, oxides of tungsten, tin and titanium.

The chlorides of columbium and tantalum were prepared by acting on the oxide with sulphur monochloride.

The reaction of the solutions of the potassium double fluorides of columbium, tantalum, titanium, and zirconium were studied quantitatively with various reagents.

Pure columbic hydrate was prepared and converted into the double fluoride with ammonium, and analyses of this made to test the possibility of its use as a basis for the determination of the atomic weight of columbium.

Mr. Hall has discharged all his financial obligations to the University, has satisfied all the formal requirements for the degree of Doctor of Philosophy, and is unanimously recommended by his Group Committee to the Faculty for that degree.

EDGAR F. SMITH,
Chairman of Group Committee XIV.

WM. ROMAINE NEWBOLD,
Dean.

Presenter, Professor SMITH.

LESLIE HOWARD INGHAM was born at Cleveland, Ohio, June 7, 1867. He passed through the public schools of Cleveland, graduating from the High School in 1885. He entered the Freshman Class of Dartmouth College in 1885, and graduated with the degree of Bachelor of Arts in 1889.

In 1890 he was appointed instructor in Chemistry in Kenyon College, Gambier, Ohio. In 1892 he was promoted to an Assistant Professorship, and in 1893 he was appointed Professor of Chemistry in that institution, which position he still holds.

He first entered the Department of Philosophy, University of Pennsylvania, January 7, 1902, while absent on leave from Kenyon College, and spent the remainder of that year pursuing graduate work in Chemistry. He re-entered the department, September 29, 1903, as Harrison Fellow in Chemistry, having again been granted a year's leave of absence from Kenyon College, and elected his major in Inorganic Chemistry, his minors in Organic Chemistry and Electro-Chemistry.

He has completed twenty standard lecture courses and in addition thereto an amount of laboratory work more than sufficient to complete our minimum requirements.

He has passed at various dates between March 10 and May 30, 1904, examinations in his major and minor subjects under Professor Smith, Dr. Rogers, and Dr. Shinn.

Mr. Ingham has presented a thesis entitled "The Use of a Rotating Anode in the Electrolytic Estimation of Zinc and of Nitric Acid." The thesis is now in press.

The value of the use of a rotating anode in the rapid deposition of metals in the electrolytic way has been established in the last few years, but the conditions which are useful for the determination of each of the several metals need to be studied.

In this thesis the author has studied the precipitation of the metal

zinc from four electrolytes, viz: sodium acetate, sodium formate, sodium hydroxide, and potassium cyanide, the conditions definitely studied including the amount of metal, the amount of salt, the dilution, acidity, current strength, voltage, speed, and time.

The effect of varying the proportions of the salt used as the electrolyte was especially studied.

The second part of this thesis is a study of the amount of metal deposited per minute from each of the electrolytes. The results are exhibited in tabular form, and are also plotted as curves between the weights of metal as ordinates and the times as abscissas.

In the third part of the thesis the conditions found to be satisfactory are applied to the determination of the zinc content of zinc blende. It was found that the mineral could be decomposed in one hour and ten minutes and the metal then determined satisfactorily in forty minutes.

The last part of the thesis is devoted to a study of the rapid reduction of nitric acid to ammonia with the aid of a rotating anode.

A method for the quantitative determination of the nitric acid content of nitrates was found which is convenient and practical, and which yields results comparing favorably with those obtained by any previously known method, and in a time not exceeding forty minutes. This procedure is believed by the author to be of a wide range of applicability.

Mr. Ingham has discharged all his financial obligations to the Univei sity, has satisfied all the formal requirements for the degree of Doctor of Philosophy, and is unanimously recommended by the Executive Committee to the Faculty for that degree.

EDGAR F. SMITH,
Chairman of Group Committee XIV.

WM. ROMAINE NEWBOLD,
Dean.

Presenter, Professor ROLFE.

HUGH SEARS LOWTHER was born at Knight, Ohio, November 10, 1877. He graduated from the High School at Middletown, N. Y., in 1895, and entered the Freshman Class of Syracuse University the same year, receiving the degree of Bachelor of Arts in 1899.

From 1899 to 1901 he taught Latin and Greek in the Genesee Wesleyan Seminary, Lima, N. Y. In 1901–1902 he taught Latin and Greek in the Friends' School, Wilmington, Del., and on September 21, 1901, he undertook graduate work in this University.

The following year, 1902–1903, he was appointed to a Harrison Fellowship in Classical Languages, electing his major in Latin, his minors in Greek and Romanics. To this fellowship he was reappointed for the year 1903–1904.

He has received credit for thirty-three and one-half standard courses. He has passed at various dates between May 20, 1903, April 21 and May 20, 1904, examinations in his major and minor subjects under Professors Rolfe, Lamberton, and Rennert.

He has presented a thesis entitled "The Syntax of Martial," and has deposited a guarantee for its publication satisfactory to the Executive Committee.

In spite of the numerous works which exist on the syntax of individual Roman writers, very little has been done in Martial, and his usage as a whole has never been examined. Blase, in the last instalment of the Historische Lateinische Grammatik, in his statements about the syntactical usage of the different Roman writers, frequently places a mark of interrogation after the name of Martial.

Mr. Lowther's aim is to treat the syntax of Martial fully; but as the subject is too extensive for a single year's work, he has confined himself in the part presented as his thesis to some phases of the syntax of the verb, adjective, and preposition.

Martial is very free in his use of adjectives as nouns with the ellipsis of a substantive, and this point has been treated exhaustively. Those verbs which admit several constructions were examined, to see whether Martial has a fondness for any special construction. The different forms of the verb, for example, in the third plural perfect and in the second singular passive were examined for the same purpose. Of the prepositions, *ab*, *de* and *ex* show interesting uses, in particular *de*, which is used with the force of the French *de*.

Mr. Lowther has discharged all his financial obligations to the University, has satisfied all the formal requirements for the degree of Doctor of Philosophy, and is unanimously recommended to the Faculty for that degree.

Wm. A. Lamberton,
Chairman of Group Committee IV.

Wm. Romaine Newbold,
Dean.

Presenter, Professor Lamberton.

HENRIETTA JOSEPHINE MEETEER was born at Laporte, Ind., June 1, 1857. She received her early education at St. Agnes' School, Philadelphia. While teaching Latin at Miss Hills's School, Philadelphia, she undertook work in Latin as an Auditor in the Department of Philosophy, 1898, and pursued it for two years.

In 1900 Miss Meeteer entered the Senior Class of the University of Indiana, and received the degree of Bachelor of Arts in 1901. In the autumn of that year she was appointed to a Pepper Fellowship in Classical Languages in the University of Pennsylvania, and to this fellowship she has been twice reappointed. She has elected her major in Greek, and her minors in Latin and Sanskrit.

She has received credit for thirty-one standard courses, and was admitted to candidacy for the degree of Doctor of Philosophy, October 9, 1901.

Miss Meeteer has passed at various dates between June 5, 1904, and May 30, 1904, examinations in her major and minor subjects under Professors Lamberton, Gudeman, and Easton.

She has presented a thesis entitled "The Artists of Pergamus." It is now in press.

During the brief period of its existence the kingdom of Pergamus became, through its library and school of writers, the most formidable rival of Alexandria in the field of literature and science, while it far surpassed the latter as a center of artistic activity.

The names of five Pergamene artists are mentioned by Pliny, and excavations at Pergamum have brought to light a number of artists' subscriptions.

These names, however, are of two classes; and it is sometimes difficult and even impossible to determine with any degree of certainty to which class a given name must be assigned. Some of them undoubtedly belonged to works of art procured by the Pergamene kings either by purchase or from the spoils of conquest. In many cases historical references or the subject of the works to which these names were attached, either in inscriptions or by ancient writers, furnish evidence more or less conclusive for including the artist among those who worked in Pergamum.

The brief list gathered thus includes painters, sculptors, and artists in mosaic. To some of them have been ascribed works of art mentioned by ancient writers. It is, moreover, generally conceded that copies of Pergamene works of art are still in existence; but whether there ever was a Pergamene school of art, in the proper sense of the term, is a disputed question.

Miss Meeteer has discharged all her financial obligations to the University, has satisfied all the formal requirements for the degree of Doctor of Philosophy, and is unanimously recommended by her Group Committees to the Faculty for that degree.

Wm. A. Lamberton,
Chairman of Group Committee IV.

Wm. Romaine Newbold,
Dean.

Presenter, Professor Rolfe.

CHARLES JASTROW MENDELSOHN was born at Wilmington, N. C., December 8, 1880. He received his early education in the English and Classical School of Wilmington, N. C., and the Episcopal Academy, Philadelphia.

He entered the Freshman Class of the College of the University of Pennsylvania in 1896, receiving the degree of Bachelor of Arts in 1900.

October 1, 1900, he entered the Department of Philosophy as Harrison Scholar in Classics. In 1901 he was appointed to a fellowship in the same subject, and was reappointed for the year 1902–1903. During the year 1903–1904 he has been engaged chiefly in the preparation of his thesis. He elected his major in Latin, his minors in Greek and Hebrew.

Mr. Mendelsohn has received credit for thirty-five standard courses, and has passed at various dates between May 29, 1902, and May 31, 1904, formal written examinations in his major and minor subjects under Professors Rolfe, Lamberton, and Jastrow.

He has submitted a thesis entitled "The Name-Play in Plautus," and has deposited a guarantee for its publication satisfactory to the Executive Committee.

It has always been recognized that one of the main sources of humor in Plautus consists of plays upon words, but with the exception of one form of word-play, the subject has never been systematically investigated. Mr. Mendelsohn has undertaken such an investigation, and has completed and presented as his thesis the part dealing with the "Name-play," including all word-plays that involve proper names, whether foreign or Latin; names of persons, of gods, and of countries; in short, of all proper names, including those coined by Plautus himself for humorous effect.

The paper consists of two parts, one of which gives a collection of these word-plays, over two hundred in number. In the second part these are classified, and their distribution among the different characters of Plautus and among the different comedies is examined.

Mr. Mendelsohn has discharged all his financial obligations to the University, has satisfied all the formal requirements for the degree of Doctor of Philosophy, and is unanimously recommended by his Group Committees to the Faculty for that degree.

Wm. A. Lamberton,
Chairman of Group Committee IV.

Wm. Romaine Newbold,
Dean.

Presenter, Assistant Professor Richards.

JOHN FRANKLIN MEYER was born at Penn Hall, Pa., March 11, 1875. He received his early education at the Spring Mills Academy, entered the Freshman Class of Franklin and Marshall College in 1890, and graduated with the degree of Bachelor of Arts in 1894.

After spending two years as Principal of the Public Schools of Alexandria, Pa., he taught Physics and Mathematics in the Franklin and Marshall Academy, 1896–1897; and in 1897 he entered the Johns Hopkins University as a graduate student in Physics and Mathematics.

He spent two and a half years at the Johns Hopkins University, but left in January, 1900, to take a position as teacher of Science in the High School of Steelton, Pa. In the autumn of 1900 he became a teacher of Physics and Chemistry in the High School of Lower Merion, Pa.; and two years later, 1902, he was appointed instructor in Physics in this University, which position he now holds.

He entered the Department of Philosophy, October 19, 1901, electing his major in Physics, his minors in Mathematics and Chemistry. He was admitted to candidacy for the degree of Doctor of Philosophy, May 19, 1903, and has received credit for thirty-six standard courses in Physics' Chemistry, and Mathematics pursued at Johns Hopkins University, and for six standard courses pursued at the University of Pennsylvania, making a total of forty-two.

Mr. Meyer has passed at various dates between October 2, 1903, and

May 14, 1904, formal written examinations in his major and minor subjects under Professors Goodspeed and Smith, Assistant Professors Richards, Fisher, and Schwatt.

He has presented a thesis entitled "The Thermo-Electromotive Force of Nickel Nitrate in Organic Solvents," which has been accepted for publication by the editor of "The Physical Review."

Measurements of the thermo-electromotive force of solutions of nickel nitrate in acetone, absolute alcohol, aniline, and pyridine with platinum wires as electrodes made with a direct-reading potentiometer gave these results:

Solutions of concentrations of one-tenth, one-twentieth, and one-fiftieth normal in acetone give zero electromotive force for temperature differences of ten degrees. The electromotive force rises to as much as 0.0099 volt in a twentieth normal solution for a difference of temperature of 30° C.

For acetone solutions the thermo-E. M. F. is found to be independent of the concentration.

The E. M. F. of alcohol solutions is large compared with water and acetone solutions, being 0.0175 volt for 30° C. temperature difference.

The organic bases, aniline and pyridine, give no thermo-E. M. F. for temperature differences of nearly 100° C. for the three concentrations used.

In acetone solutions the heated electrode is always positive towards the unheated electrode, and in alcohol solutions is positive when the electrodes differ in temperature more than 15° C.

Polarization effects are large and extremely difficult to overcome. They are large enough to mask the thermal effects and must be guarded against.

Mr. Meyer has discharged all his financial obligations to the University, has satisfied all the formal requirements for the degree of Doctor of Philosophy, and is unanimously recommended by the Group Committee to the Faculty for that degree.

A. W. Goodspeed,
Chairman of Group Committee XIII.

Wm. Romaine Newbold,
Dean.

Presenter, Professor Smith.

SARAH PLEIS MILLER was born in Philadelphia, July 28, 1875. After passing through the public schools of Philadelphia, she graduated from the Girls' High School in 1892, and from the Girls' Normal School in 1894. In the latter year she entered the University of Pennsylvania, Department of Biology, and received the degree of Bachelor of Science in Biology in 1899. From 1901–1904 she was an assistant in Zoölogy in the Girls' High School, Philadelphia, and in 1904 was appointed teacher.

October 19, 1899, she entered the Department of Philosophy, electing her major in Inorganic Chemistry, her minors in Organic and Electro-

Chemistry. She was accepted as a candidate for the degree of Doctor of Philosophy, September 27, 1904.

She has received credit for twenty-nine and one-half standard lecture courses and has passed at various dates between January 2 and May 3, 1904, formal written examinations in her major and minor subjects under Professor Smith, Dr. Rogers, and Dr. Shinn.

Miss Miller has presented a thesis entitled "Determination and Separations of Gold in the Electrolytic Way." The thesis is now in press.

The purpose of this investigation was to obtain a number of results and their conditions, for the deposition of gold:

(a) from potassium cyanide solution,
(b) in phosphate solution,
(c) from its solution in sodium sulphide;

and to employ the data thus gathered for separations of gold from various other metals.

The results obtained, in the precipitation of gold from its solution in potassium cyanide, were very satisfactory, the deposited gold being of a bright yellow color and quite adherent. The rate of precipitation was observed and a curve plotted from the results.

Several separations of gold from other metals were attempted, in the presence of potassium cyanide: that of gold from iron was successfully carried out.

Many trials were made to effect the separation of gold from cadmium, gold from silver, and gold from mercury in an electrolyte containing potassium cyanide, and also in one containing potassium cyanide and caustic potash. Many interesting facts concerning the behavior of the metals, thus associated, were gained—but their separation was not accomplished.

The determination of gold from phosphate solution next received consideration. Gold deposited from such solution is usually colored a light brown, but on gently warming, it assumes a bright yellow color, and is adherent, permitting of washing by cold and hot water.

In this electrolyte gold was successfully separated from cadmium, iron, zinc, cobalt, and from nickel. Its separation from copper did not prove satisfactory.

Sodium sulphide solution of gold proved itself, as an electrolyte, in every respect to be as satisfactory as that of the double cyanide. The gold deposited was very adherent and of a bright yellow color, and in addition appears like polished metal.

The two separations tried using this electrolyte—gold from mercury, and gold from tin—were, however, unsuccessful.

Miss Miller has discharged all her financial obligations to the University, has satisfied all the formal requirements for the degree of Doctor of Philosophy, and is unanimously recommended by her Group Committee to the Faculty for that degree.

Edgar F. Smith,
Chairman of Group Committee XIV.

Wm. Romaine Newbold,
Dean.

Presenter, Assistant Professor CLAY.

JAMES ALAN MONTGOMERY was born in Philadelphia, June 13, 1866. He received his early education at the Episcopal Academy, Philadelphia, entered the College of the University of Pennsylvania, 1883, and received the degree of Bachelor of Arts, 1887.

In 1887–1890 he was a student in the Divinity School of the Protestant Episcopal Church in Philadelphia, and during those years he also pursued graduate work in the Department of Philosophy, entering October 5, 1887, being the ninth student to enter the department.

1888–1890 he was instructor in Hebrew in the College of this University. In 1890 he was appointed Travelling Fellow of the Divinity School of the Protestant Episcopal Church in Philadelphia, and spent the two following years, 1890–1892, studying at the Universities of Greifswald and Berlin.

Since 1892 he has been engaged in parochial and editorial work in connection with his duties as a clergyman of the Protestant Episcopal Church, and from 1899 to date has been instructor in Hebrew in the Divinity School of the Protestant Episcopal Church in Philadelphia.

He resumed graduate work December 4, 1901, entering the Department of Philosophy, and electing his major in Hebrew, his minors in Aramaic and Assyrian.

Mr. Montgomery has received credit for twenty-one standard courses pursued at this University, and for approximately sixteen courses pursued at the Universities of Berlin and Greifswald.

During the year 1902 he undertook in addition to his regular University work a systematic study of the Talmud under the direction of that eminent scholar, the Rev. Dr. Marcus Jastrow, lately deceased.

He has passed, on May 27 and 28, 1904, formal written examinations in his major and minor subjects under Professors Hilprecht and Jastrow, and Assistant Professor Clay.

Mr. Montgomery has presented a thesis entitled "The Samaritan Sect of the Jewish Church, Part I," and has deposited a guarantee for its publication satisfactory to the Executive Committee.

This thesis is designed to be introductory to a larger work dealing with the "History of the Samaritan Sect of Judaism." It treats of the physical and spiritual differences between northern and southern Israel, their relations after the fall of the two states, and then examines the scattered and obscure data at hand for the understanding of the rise of the Samaritan sect. This portion of the work concludes with the fourth century B. C.

Mr. Montgomery has discharged all his financial obligations to the University, has satisfied all the formal requirements for the degree of Doctor of Philosophy, and is unanimously recommended by his Group Committees to the Faculty for that degree.

MORRIS JASTROW, JR.,
Chairman of Group Committee I.

WM. ROMAINE NEWBOLD,
Dean.

Presenter, Professor SMITH.

RALPH EMERSON MYERS was born at Wooster, Ohio, June 13, 1879. He received his early education in the public schools of Akron and Toledo, Ohio, and graduated from the High School in 1897. In the same year he entered the Freshman Class of Buchtel College, graduating with the degree of Bachelor of Science in 1901.

September 27, 1901, he entered the Department of Philosophy of the University of Pennsylvania, electing his major in Electro-Chemistry, his minors in Inorganic and Organic Chemistry.

In the year 1902–1903 he was an assistant in Chemistry in the College of this University. He was accepted as a candidate for the degree of Doctor of Philosophy, February 27, 1904.

Mr. Myers has received credit for twenty-two standard lecture courses, and has completed laboratory work more than sufficient to enable him to meet the prescribed minimum requirements.

He has passed at various dates between March 10 and June 4, 1904, formal examinations in his major and minor subjects under Professor Smith, Dr. Rogers, and Dr. Shinn.

He has presented a thesis entitled "Results Obtained in Electro-Chemical Analysis by the use of a Mercury Cathode." The thesis is now in press.

It has been clearly demonstrated in recent years that valuable electrolytic determinations and separations of metals are possible with the aid of a mercury cathode. The purpose of this investigation was to extend this method to elements which had never been studied under such conditions. An extended description of the apparatus and the manner of using it then follows. The results have been most satisfactory, and are decidedly helpful to the analyst. They may be summed up as follows:

I. Chromium is deposited quantitatively upon a mercury cathode. This behavior makes possible its separation from aluminum and beryllium, whose salts are not decomposed by the current under these conditions.

II. Molybdenum also enters the mercury quantitatively. Hence its separation from vanadium was achieved.

III. Iron was separated from cerium, lanthanum, neodymium, praseodymium, yttrium, vanadium, beryllium, and aluminium.

Mr. Myers has discharged all his financial obligations to the University, has satisfied all the formal requirements for the degree of Doctor of Philosophy, and is unanimously recommended by his Group Committees to the Faculty for that degree.

EDGAR F. SMITH,
Chairman of Group Committee XIV.

WM. ROMAINE NEWBOLD,
Dean.

Presenter, Professor NEWBOLD.

WILLIAM THEODORE PAULLIN was born in Philadelphia, September 11, 1871. He was educated in the public schools of Philadelphia, graduating from the Central High School in 1888. He entered

Bucknell University in 1891, and received the degree of Bachelor of Arts in 1895.

From 1895 to 1898 he was a student in the Crozer Theological Seminary, and in the latter year was ordained a minister of the Baptist Church. In 1896 he was granted the degree of Master of Arts by Bucknell University on examinations passed upon non-resident work.

Mr. Paullin entered the Department of Philosophy of the University of Pennsylvania, October 23, 1900, electing his major in Philosophy, his minors in Ethics and Psychology. In 1901 he was appointed to a Harrison Fellowship in Philosophy, and was reappointed for the year 1902–1903. During 1903–1904 he was absent on leave at the University of Chicago. He has received credit for twenty-five standard courses, and has passed formal written examinations in his major and minor subjects under Professors Newbold and Witmer, and Assistant Professor Singer.

Mr. Paullin has presented a thesis entitled "The Datum of Knowledge; *das Gegebene* in the Transition from Kant to Fichte." This thesis has been accepted by the University Publication Committee, and will appear in the University Series in Philosophy.

Kant and Fichte differed in their attitude toward the material or datum of knowledge. The Fichtean denial of a datum, however, was the necessary issue of the Kantian position. Kantian data are indefinable, and involve a reference to things in themselves beyond possible experience, as well as a dualistic psychological distinction between sensation and thought. Kant was unable to free his thought of these implications. Jacobi pointed to the "thing in itself" as a source of confusion. Schulze denied of the "thing in itself" all meaning, while Maimon gave it meaning only within experience. This denial of the transcendent "thing in itself" tended to unify the Kantian psychology. The attempt to effect that unification was the special task, however, of Reinhold. He found in the faculty of ideation the unity of psychic processes which he sought, but this conclusion necessarily left the "thing in itself" in a precarious condition. Beck unified this twofold development by rejecting transcendent "things in themselves," and grounding all knowledge in one primitive psychic process. The outcome was Fichtean. Repudiated by Kant, claimed by Fichte, Beck claimed to be Kantian. He did not grasp his own meaning. Even without Fichte, the Kantian doctrine of data actually has issued in a Fichtean result.

Mr. Paullin has discharged all his financial obligations to the University, has satisfied all the formal requirements for the degree of Doctor of Philosophy, and is unanimously recommended by his Group Committee to the Faculty for that degree.

LIGHTNER WITMER,
Chairman of Group Committee VIII.

WM. ROMAINE NEWBOLD,
Dean.

Presenter, Professor PENNIMAN.

LEONIDAS WARREN PAYNE, JR., was born at Auburn, Ala., July 12, 1873. He received his early education in the public schools of Auburn, Ala. In 1888 he entered the Freshman Class of the Alabama Polytechnic Institute and graduated with the degree of Bachelor of Science in 1892. He pursued graduate courses at the same institution and for two years held the position of assistant in English. He received the degree of Master of Science in 1893. In 1895 he was appointed teacher of English and Languages in the Southwest Alabama Agricultural School, which position he held for six years. He was appointed teacher of English in 1901 in the State Normal School, Jacksonville, Ala. He was granted a leave of absence for the year 1902 to accept a special fellowship in English in the University of Pennsylvania, and entered the Department of Philosophy as holder of this fellowship, September 26, 1902, electing his major in English Literature, his minors in English Philology and Germanics. At the close of the year 1903 he was appointed Harrison Fellow in English for the year 1903–4. Mr. Payne has completed thirty-four standard courses, and has passed at various dates between April 20 and May 23, 1904, formal written examinations in his major and minor subjects under Professors Schelling, Learned, Penniman, Easton, and Assistant Professor Child.

He has presented a thesis entitled "'The Hector of Germany,' an old English Play," and has deposited a guarantee for its ultimate publication satisfactory to the Executive Committee.

The thesis is an edition of a rare English play entitled *The Hector of Germany or the Palsgrave Prime Elector*. It has never before been reprinted. The signature of the author on the two title pages of the quarto in the library of the University of Pennsylvania is "W. Smith." The problem of the identification of the initial with William or Wentworth is considered, and the conclusion reached that Wentworth Smith is the author of the play. The date of the quarto is 1615 and the play was written in 1613. The latter point is clearly shown by certain references in the text and by the general treatment of the historical character of the Palsgrave of the Rhine, who, as the hero of the play, is but the prototype of Frederick V of the Rhenish Palatinate, the son-in-law of James I. His marriage with the Princess Elizabeth took place on February 14, 1613.

The play represents a type of popular or journalistic drama, which has heretofore, owing to the ephemeral nature of such literature, received very little attention. The main plot of the play has a background in historic fact, and deals partly with the broils for the succession to the Imperial crown in the latter part of the fourteenth century, and partly with the quarrel between Don Pedro of Aragon and his bastard brother known as Henry of Trastomare. Hence the play may also be classed among that group of English plays which treat of foreign history. A comparison of this play with *Alphonsus Emperour of Germany*, which treats of the same historical material, shows that the latter was probably used as a model for *The Hector of Germany*, but the two plays are quite dissimilar in other points.

A complete study of Wentworth Smith's connection with the Admiral's men has been made, and a complete list of all plays with which Smith was in any way connected has been drawn up from *Henslowe's Diary* and other papers. All the possible survivals of these plays in their relations to other plays and playwrights are considered.

The identity of Smith's initials with those of Shakespeare has led many critics to assume that Wentworth Smith was the author of the plays signed "W. S." A careful study of this question leads to the conclusion that Smith had nothing to do with the composition of the so-called "W. S." plays.

The sources of the historical material of *The Hector of Germany* have been found in Holinshed and Froissart and Stowe, though the treatment of historic fact is shown to be extremely romantic. The source of the underplot, a love romance in which a father and son contend for the same woman, has been traced from the *Casina* of Plautus through several English plays, notably Chapman's *The Gentleman Usher*.

The text is an exact reprint of the original quarto, with divisions into acts and scenes, suggested readings, explanatory notes, etc.

Mr. Payne has discharged all his financial obligations to the University, has satisfied all the formal requirements for the degree of Doctor of Philosophy, and is unanimously recommended by his Group Committees to the Faculty for that degree.

FELIX E. SCHELLING,
Chairman of Group Committee VII.

WM. ROMAINE NEWBOLD,
Dean.

Presenter, Professor CONKLIN.

EVERETT FRANKLIN PHILLIPS was born at Hannibal, Ohio, November 14, 1878. He received his early education in the public schools of Columbiana and Cuyahoga Counties, Ohio; entered Allegheny College as a Freshman in 1896, and received the degree of Bachelor of Arts in 1899.

The following year, 1899–1900, he was head of the Science Department of the New Brighton, Pa., High School.

He entered the Department of Philosophy of the University of Pennsylvania, September 30, 1901, electing his major in Zoölogy, and both minors in Botany. He was appointed to a Harrison Fellowship in Zoölogy for the year 1903-1904.

He has received credit for twenty-six standard lecture courses, and has completed in addition thereto laboratory and research work equivalent to about fifteen standard courses.

He has passed, at various dates between February 29 and May 25, 1904, formal written examinations in his major and minor subjects under Professors Conklin and Macfarlane, Dr. Moore and Dr. Harshberger.

He has undertaken a comprehensive study of the structure, development and habits of the honey bee, of which he has completed three parts. Two of these he has published under the following titles: "Comparative Variability of the Drones and Workers of the Honey Bee," Biological

Bulletin, Dec., 1903; "A Review of Parthenogenesis," Proc. Am. Phil. Soc., Oct. 16, 1903.

Mr. Phillips' thesis is a third study in the same field. It is entitled "The Structure and Development of the Compound Eye of the Honey Bee." He has deposited a guarantee satisfactory to the Executive Committee to ensure its printing.

The content of the thesis may be outlined as follows:

The compound eyes of insects are composed of numerous units called *ommatidia*, each of which has its own lens and nerve endings. The adult structure of the eye of the honey bee has been examined in this work, particularly with reference to the method of nerve-ending in the sensory cells of the retinula.

The development of the ommatidium has been traced from the time when it is represented by a one-layered condition of the larva through the pupa stage to the adult condition. In this way it has been possible to study the changes which take place in each of the component parts of the ommatidium, and to find by what methods these parts are formed.

The ommatidium of the bee is composed of a lens, continuous with the body covering, a group of four refractive cells, the cone, for refracting the light; still more and below these are eight nerve cells surrounding a nerve terminus called the rhabdome. All this is surrounded by two kinds of pigment cells to prevent reflection and refraction within the eye.

In addition to this work, the development of the hairs which cover the entire eye of the young bees was worked out.

Mr. Phillips has discharged all his financial obligations to the University, has satisfied all the formal requirements for the degree of Doctor of Philosophy, and is unanimously recommended by his Group Committees to the Faculty for that degree.

E. G. Conklin,
Chairman of Group Committee XV.

Wm. Romaine Newbold,
Dean.

Presenter, Professor Penniman.

KATE WATKINS TIBBALS was born in Baltimore, Md., April 27, 1877. She received her early education in private schools. She entered the Freshman Class of Wellesley College in 1895, and received the degree of Bachelor of Arts in 1899.

After a year of teaching, she entered the Graduate Department of Bryn Mawr College in 1900 as Scholar in English, and the following year she was appointed to a fellowship in English.

Miss Tibbals entered the Department of Philosophy of the University of Pennsylvania, September 29, 1902, as Moore Fellow in English. The following year she was appointed to a University Fellowship in English, electing her major in English Literature, her minors in English Philology and Greek.

She has passed at various dates between April 15 and May 23, 1904,

formal written examinations in her major and minor subjects under Professors Schelling, Penniman, Easton, Lamberton, and Assistant Professor Child.

Miss Tibbals has presented a thesis entitled "'The Royall King and the Loyall Subject,' by Thomas Heywood from the Quarto of 1637, edited with Notes and an Introduction," and has deposited a guarantee for its publication satisfactory to the Executive Committee.

The thesis is divided into three parts:

I. The introduction, consisting of (1) problems connected with the play (A) its date, according to internal evidence, the only evidence available, between 1600 and 1603; (B), its authorship—the arguments of Mr. Fleay on the basis of an entry in Henslowe's diary, under date November, 1602, of a play called "Marshal Osric" by Thomas Heywood and Mr. Smith, that "Marshall Osric" and the "Royall King and the Loyall Subject" are the same play, and that therefore Heywood was assisted by "Mr. Smith" in its composition, are found to be inconsistent with themselves, and internal evidence is against the theory of collaboration; (C) the relation of the play to its source, the fourth Novel in Painter's *Palace of Pleasure*, as pointed out by Dr. Koeppel—Heywood changed the names of his characters and transferred the scene from Persia to England, adding an underplot of which the scenes are thoroughly English; otherwise he followed his source slavishly, quoting at times almost word for word.

(2) Quotation of the story as given in Painter, irrelevant material only being omitted.

(3) A comparison of the present play with Fletcher's "Loyal Subject" also derivable from the Painter story. Certain clear parallels make it probable that Fletcher knew the present play and used it, or hints from it, in the construction of his own, licensed in 1618. "Chabot, Admiral of France," attributed to Chapman and Shirley, exhibits a general likeness of motif with the two "Loyall Subject" plays.

(4) An appreciation of the play itself, which is thoroughly representative of the work of Thomas Heywood in both its virtues and its faults.

II. The text of the play is copied with the most careful attention to accuracy from the Quarto first edition, all corrections and emendations, together with the variant readings of the three previous editions, being given at the foot of the page.

III. Explanatory and illustrative notes, with quotations of parallels from the other Elizabethan plays.

Miss Tibbals has discharged all her financial obligations to the University, has satisfied all the formal requirements for the degree of Doctor of Philosophy, and is unanimously recommended by her Group Committees to the Faculty for that degree.

Felix E. Schelling,
Chairman of Group Committee VII.

Wm. Romaine Newbold,
Dean.

WORDS AND THINGS

Address by Professor Martin G. Brumbaugh, Ph. D., LL. D., before the Societies of Phi Beta Kappa and Sigma Xi in Houston Hall, June 15, 1904.

By his will, dated February 16, 1831, Stephen Girard created the now world-famous College which bears his name, and which is one of the noblest benefactions history records. In this will, Stephen Girard specifies the form of education he wishes to have inaugurated, saying, among other things, concerning the pupils, "I would have them taught facts and things, rather than words or signs." Thus Girard, under the direct influence of his contemporary and friend, Rousseau, voiced anew the protest that Rousseau hurled at the ultra-linguistic training of the Jesuits in the memorable words: "I have no love whatever for explanations and talk! Things! things! I shall never tire of saying that we ascribe too much importance to words."

This is but an incident in a long story that records the conflicting claims of literature and of science for dominance in our educational activities. President Eliot, in his inaugural address in 1869, voiced the modern judgment as to the claims of these two forms of knowledge. He said: "The endless controversies as to whether the literary or scientific studies afford the best mental training are useless, as we want both literature and science and at their best." Advanced pedagogic investigations have confirmed this opinion, and the question is no longer one of words *or* things, but one of words *and* things indifferently utilized as educational sources, and the same words and things at their best. We have passed from a discussion of the content of our education to a discussion of the method of its interpretation.

This method of interpretation has given to modern education a twofold aspect. It aims to promote knowledge in the mind of the student and to secure culture as well. In carrying out this dual aspect of its mission, owing to the trend of the history of education, two types of institutions appear in modern civilization. The older of these types is the humanistic institution, which primarily sets out to give culture to the student by the study of the revived classical languages, in the Renaissance time. This splendid culture-movement in the race developed high scholarship and bred gentlemen of leisure whose lives were

devoted to highest ideals, and whose activities usually expressed themselves in some literary form or through the learned professions. This form of culture fastened itself upon our educational policies and gave life to our earliest higher institutions of learning and determined the scope of the other activities. Under the feeling that the chief end of an education is, as Locke put it, "to breed the gentleman," each student is required to pursue a uniform curriculum and achieve practically the same standard of culture and breadth of history and literary lore. With the dawn of democracy and the emancipation of large groups which heretofore did not aspire to the higher culture, there arose the public school system, which fundamentally includes the reorganization of society through universal elementary education. When this broader conception of educational activities had once fixed itself in the mind of the people, intelligence became, not the exception, but the rule. There was an immediate response to this broader training in the increased industrial activities of the race. Inventions began to appear, skilled workmen with trained minds were demanded as never before, and the differentiation of activities became increasingly prominent and essential. When this higher training in industrial activities had become a part of the legitimate policy in education, there arose a demand for a new type of training, the purpose of which was to fit men to do things in the broad and busy industrial life of the new civilization. Railroads were to be constructed; large consolidated factories were to be erected and supervised; bridges were to be built; tunnels were to be cut through the mountains; steam was to be applied to vessels as well as to machinery; and industrial competition as the outgrowth of these newer conditions compelled capital to seek the guidance of trained experts. These trained experts became a necessity in our civilization. They demanded a special training differing essentially from that given in the higher institutions of learning. Higher education found itself in one of its aspects out of touch with the needs and conditions of modern life. There arose a protest which took formulation in the pride of being a self-made man, and in the criticism of the classical school as a theoretical rather than a useful institution. Higher education speedily realized the need of providing for this new group of thoroughly trained men in the sciences. There arose in response to this the technical school and the technical

department in the old classical school, the avowed purpose of which institutions is to train men for efficient industrial service rather than to give them the old-time typical cultural studies so much prized by our ancestors. We have as a result these dual qualities in our modern education. It is manifestly unwise and unnecessary to draw any comparison between these two forms of education. It would be foolishness to assert that one is better than the other; each is best because each has come as a distinct answer to a definite need, and the one cannot supplant the other, because the fields which they occupy are distinct. The simple problem is to give to these two types of education such a setting, one with another, and such an interrelation as to accomplish the highest good to the individual student, and to develop the noblest type of education for the race. Perhaps tho older cultural school was, in its modern setting, inadequate te the needs of the hour. Perhaps, also, the newer institution growing out of unique and modern needs lacks some of the respect and reverence which should attach to a form of culture that has served the civilization of the race so admirably through the centuries. It seems to me that the problem has so to relate itself one to another as to produce neither the gentleman of leisure with his high culture and his intellectual isolation, nor yet the man of affairs, who with scientific insight transmutes the crude laws of nature into the highest forms of service and productive effort. It would seem, therefore, that these two types of education should undertake with full assurance of mutual benefit to afford their pupils increasingly wide participation in the activities of the other. The man of culture with his major interest in the old humanistic lore, loving the magnificent qualities that have come down to us from the broken days whose memories are sacred, should have minor interests reaching out and interrelating him with the busy scientific life and methods of the modern world. On the other hand, the student of the sciences, stimulated with a new interest, thinking of important practical utilities, should, in order properly to balance his mind and broaden his interests, have that breadth of culture which the humanities alone, so far in the history of the race, have produced.

It may be well to define the terms, culture and training, as used in this connection. It is not at all understood that these terms are antithetic or mutually exclusive, one of the other.

There are, however, two things that seem to be particularly established in our educational theories. The one is that it is possible to give an education containing a maximum of knowledge with a minimum of mental organization: the other is, that it is possible to give an education with a maximum of organization and a minimum of knowledge. In the former, the emphasis of discipline rests upon the facts that are imparted. In the latter, the emphasis rests upon the activity of the mind occasioned by facts as presented. If one marks this distinction, it is possible to understand the fundamental difference between a cultured mind as such and a trained mind as such. In both cases the advance in efficiency will depend upon the broadening of each into the sphere of the other. If the man of culture, as above defined, will turn his trained powers and disciplined activities to the solution of practical human needs, he finds as a result that his equipment of mind enables him with facility to lay hold upon scientific truth and comprehend its significance, and perhaps more than any other person, appreciate its service. And the man of scientific interests who turns his attention to the cultural studies finds in doing so something of the sweet culture which flavors and conditions all his activities in his chosen profession. He lifts himself by its breadth and interest into a work which dignifies and ennobles him. Thus the educational value of each is in no small degree enhanced by the other.

One is led thus to the conclusion that the best type of modern education is found in those institutions that cherish the ancient ideals of culture, and at the same time foster the forms of scientific education made necessary in our modern civilization. Such is the ideal of the noble institution under whose fostering care we meet to-day. The University of Pennsylvania is perhaps the first institution in America that clearly saw this dual aspect of modern education and planned to realize it. As early as 1771, a competent critic, who attended the Commencement exercises of that day, gives in the following narrative a full account of our Alma Mater in that pre-Revolutionary day. The report is by Rev. Jacob Duché,—the famous Caspipini,—and is addressed to the Right Hon. Viscount P——, at Oxford, England, and is, I think; practically unknown to the scholars of to-day:

"Whilst I was at breakfast one day last week with Dr. M——, whom I had seen at Oxford some years ago, he received

a card to attend a public Commencement at the College the next day. As I expressed a desire of accompanying him there, if it should not be inconvenient, he very politely called upon me in the morning, and took me into the apparatus-room, where the Trustees or Governors of the College were met. There is no place or scene that I have visited, since my arrival in America, at which I more ardently wished for your Lordship's presence than this. I accompanied the procession of Trustees and Professors into their public hall. The Provost opened the Commencement with two or three Collects of our Liturgy, well chosen and adapted to the occasion, together with an excellent prayer of his own composition. The exercises were some in English, and some in Latin, consisting of forensic and syllogistic disputations, and several little essays in the declamatory way, which the young gentlemen for the most part delivered with propriety of pronunciation and action; though a gentleman who sat next to me declared, that the present candidates were by no means equal to many who had received the honors of this Seminary. Their pronunciation of the Latin, indeed, seemed to be a little defective, and yet they have an excellent pattern in the gentleman who presided during the acts, who spake with great distinctness and paid due regard to the quantity and emphasis.

"The peculiar attention that is given in this Seminary to the English language is worthy of being imitated by our Universities and Academies at home. They have a Professor here whose sole business is to teach boys their native tongue grammatically, and instruct them in the method of reading and pronouncing it with propriety. For this purpose he is frequently exercising them in little speeches, extracted from plays, parliamentary debates, Roman history, poems, sermons, etc., and I am told that the Seminary owes much of its present reputation to this part of its plan.

"The Professor of Languages has the Latin and Greek school in excellent order, both with respect to instruction and discipline. He assures me that he had seldom less than eighty or ninety boys under his care. The higher classics are read in the philosophical schools, under the direction of the Provost and Vice-Provost, who give lectures in geography, mathematics, logic, rhetoric, natural and moral philosophy.

"Upon the College has lately been engrafted a medical school,

with Professors in all the branches necessary to complete a medical education, so that they have now annually a course of lectures in anatomy, the theory and practice of physic, botany, materia medica and chemistry. Pupils from all parts of the continent, I am told, have crowded to Philadelphia since this school was opened, as the advantages here are thought to be almost equal to those of Europe. Nothing now seems to be wanting to render this Seminary a University in the largest sense of the word, but two more Professorships, one in divinity and the other in civil and municipal law. The first of these, however, is supplied by the Provost himself, who reads a course of divinity lectures when any of his pupils declare themselves candidates for the ministry.

"One thing I must not omit, which cannot fail of giving pleasure to a benevolent heart, and that is, that to this College is annexed a Charitable School, in which youths of both sexes are instructed in all the necessary parts of a common English education. A merchant of my acquaintance assured me that he knew several instances of the happy effects of this charity, and among the rest, that the young man to whom he intrusted the chief part of his business had received his education wholly at this school.

"The situation of Philadelphia, in the very center of the British colonies, the manners of its inhabitants, the benevolent and catholic plan of this Seminary, which exceeds anything I ever met with at home or abroad, together with the moderate expense of a learned education here, are circumstances which, I am persuaded, must give this College the preference to any that are, or may be erected in North America; and I doubt not, but that the inhabitants of the West India Islands, many of whom have been well educated and have a high taste for literature, did they once make the experiment, would soon be induced by the success to prefer an American to an English education, at least for the earlier season of their children's lives. For my part, I must confess, in spite of all my prejudices in favour of our beloved Oxford, that, had I a son, I should certainly choose to let him go through a course of education at Philadelphia College, before I ventured to send him to that University. For your Lordship well knows that what we principally expect from spending a few years at Oxford or Cambridge are, the opportunities we have there of conversing with men of genius, and forming such useful

and agreeable connections as may contribute not a little to our future happiness in life.

"The very ingenious Dr. F——n, who, your Lordship may remember, was introduced to you one evening at the D— of N——d's, and who has been celebrated all over Europe for his discoveries in electricity, was among the first projectors of this institution. And I recollect a few days since, to have heard a gentleman of this city, who is a friend to literature, and no enemy to Dr. F——n, express an ardent wish that he would relinquish his political employments and once more resume the philosophical chair: adding, that the calm regions of philosophy would, in his opinion, agree much better with the doctor's genius and disposition, than the stormy element of politics. Certain it is, that his fellow citizens acknowledge themselves much indebted to him for many of the excellent institutions that do honour to their city and province. Nor are they without hopes that he will yet return to his native country and employ the remainder of his days in assisting them to complete the several plans for the success of which he once appeared to be so much in earnest.

"The College, however, is at present in good hands. Gentlemen of the first distinction for learning and fortune are among its trustees. The Provost is well known for his literary character and excellent compositions both in Europe and America. He was particularly patronized by the late and good and learned Archbishop of Canterbury, whose memory your Lordship reveres; and by his influence, obtained his Majesty's brief for a collection throughout England for the joint benefit of this Seminary, and that of New York. Your Lordship, I remember, was a contributor, and expressed your high approbation of the liberal and generous plan on which it was founded. This plan is most religiously adhered to, and though among nine Professors there are but three of the Church of England, yet this is not owing to any neglect or disrespect towards the members of our communion, but because no more than these three have hitherto presented themselves as candidates for any Professorship, and the trustees never inquire into the religious profession (provided it be Protestant), but solely into the literary merit and moral character of those that offer. The Vice-Provost is one of the oldest and most respectable ministers of the Presbyterian denomination, and

has the honour of being among the first that introduced science into this heretofore untutored wilderness."

Our forms of higher education are largely traditional. They represent the medieval conception of "Universitas," in which three learned faculties—law, medicine and theology—were provided. Later a fourth faculty, philosophy, arose to justify the claim of scholastic philosophy. To these, as the race advanced and as inductive forms of thought became current, newer types or forms of education were added. The modern university is an aggregate of separate faculties bound together by no scientific law. We have not yet undertaken a scientific organization of higher education. Our difficulties arise in attempting to apply scientific method to traditional forms of education. Is it possible now to indicate a scientific basis for the content of higher education? If so, we have thereby defined scientifically the scope of a true university.

One is always interested in a new educational theory. It usually contains enough of truth to challenge the interest of the student, and enough of error to cause it to be received with caution, and sometimes with suspicion. The element of new in it is usually small. At best its contribution is the new phrasing of old truths. When, however, a modern educational leader takes the position that the human mind is only the sum of the ideas which it entertains, one is brought face to face with a new basis for pedagogical interpretation. Here the problem is not "given a mind with empty faculties to be filled with knowledge from without," but "given ideas and facts of the outer world with which to create a mind." This mass of facts breaks itself into groups, and centres itself around certain dominant ideas which may be regarded as the centre or the core of systems of ideas. If we call these systems of ideas apperception masses we have before us an interesting theory. Education becomes the process of enriching one or more of these apperception masses. This enrichment may be accomplished in two ways: first, by presentation of additional facts and their association with those already in the mass; second, by the interrelation of the facts in one mass with the facts in another mass. Each idea in the mind belongs to one or the other of these masses of ideas or groups of ideas. If, then, an idea which the mind has placed in one group by any chance finds its way into another group, there is at once

a feeling of surprise, which is the basis of humor, provided the surprise be mild and not accompanied by pain. If the feeling be intense and accompanied by pain, the opposite of humor results.

In the rhyme of the "Mother Goose" melodies, Mary, who owned a lamb, took it to school one day. The author informs us that it made the children laugh. The laugh was occasioned not by the fact that it was a lamb, but because of the fact that the lamb was out of its group. If the lamb had been seen with green fields and shady slopes and bleating herds there would have been no laughter. It was because the lamb was in school, and because the children had not been associating lambs with desks and teacher and rod and bell and slate and pencils and recitations, that led to the strange reception which the innocent animal received. Had the children discovered their teacher out with the lamb group of ideas, playing in the green fields and on the hillside with the shepherd and with the sheep, the same result would have occurred. The law is that each idea first of all must find its true setting in its own group; later on in the higher organization of the mind, these ideas that belong especially to one group may without incongruity be associated with ideas of other groups, and in this way the deeper dependence of ideas arises. It is this quality of knowledge that produces more than the traditional culture of the race, and more than the modern training of the race. It produces a many-sided and worthy interest in all the affairs which concern human endeavor and human destiny. Our education comes first of all through interest in things immediately present to sense. In the second place, through things reported to us by human agencies. The first elements may be called *knowledge*, the second may be called *sympathy*. Our knowledge of things may be *empiric*, giving rise to the inductive sciences; or *speculative*, giving rise to the pure sciences; or *æsthetic*, giving rise to art in all its forms. These three interpretations of nature produce three forms of knowledge, or in other words, occasion three groups of ideas which are distinct, but which in the building of the broadest modern culture must have many interrelations. Our sympathy with others which may come either by direct contact, or through the literature and history of the race, also produces three separate groups of ideas. The relation of each human being to each other in the

group occasions the *humanistic* interest in mankind. His relation to the whole group occasions his *social* interest in mankind, and his association through faith with the Divine occasions his *religious* interest in the ultimate destiny of the race.

Education thus aims to produce a many-sided interest, through knowledge and sympathy, in the entire round of human activities. It is breadth in these things that makes the modern educated man. He must hold not one group of ideas and no more. He must be a man of broad and universal interests, having his knowledge and his sympathy extending in all directions. His education in its last expression, however, must be accomplished through the specialization of his interests in order to give strength and directness to his discipline. He must find in one of these directions the group of ideas that will render him peculiarly efficient in serving the race. He may pursue his empiric interest, and become the scientist whose insight and skill and training enable him to be the captain of the captains of industry. He may develop his speculative interest until his clear vision and concentrated thought shall enable him to give guidance to the thinkers of the race. He may develop his æsthetic interest until he becomes the efficient leader and the authoritative voice in all matters relating to the art elements in our modern civilization. In any of these determinants he is pre-eminently imbued with the search for law. His problem is the organization of facts. His interest is the interpretation of knowledge based upon things.

Or he may be predisposed to the sympathetic relations to life. Men in their multiform activities and the race in its stately progress may appeal to him as of transcendent value, in which case his specialty may become humanistic, and his studies that form of rich material which has come down to us through Homer and Virgil and Dante and Goethe and Shakespeare and Milton and Wordsworth. Or his interest may be social, and his studies lead him to serve his fellows in the great democratic and industrial activities of the race. Or finally, his soul may struggle with the unrest that comes to him that seeks repose in the life beyond life. He may be willing to lay aside in the last analysis all that he is and all that his fellows may be to him, and, in the spirit of humiliation, surrender himself to the guidance of the Divine, in which case his interest is religious.

It is not necessary, it is perhaps impossible, to determine the relative value of these interests, just as it is unnecessary and equally impossible to determine the relative value of science and of literature, of things and of words. The real thing for us to understand and prove and foster is the fact that modern education becomes the highest and most perfect discipline of respect on the part of those who pursue any one of the interests for those who with equal zeal pursue the other. There must be no essential conflict. There must be no narrow, no unworthy ideal in the modern scholar.

If now we seek to interpret this somewhat theoretical analysis of modern education into the concreter forms of institutional interests we have the scope of the modern university. Historically the university sprang in the Middle Ages from the need of the newly cultured scholastic for companionship in his newly acquired interests. It soon became the avowed thesaurus of the learning of the race, and their activities centred in the four historic faculties—theology, medicine, law and philosophy. That this number of faculties arose is due to the peculiar quality of the civilization which called them forth. That a modern university has any especial need to follow this historic unfolding, simply because it is historic, is certainly not proven.

If, however, our analysis of education in its theoretic fullness may be accepted as correct, we have need for at least six superior departments in a modern university: the faculty of empiric sciences; the faculty of speculative or pure sciences; the faculty of æsthetic interests; and also the faculties of literature, of economics and of theology. The schools of applied science, of medicine, of veterinary medicine and of dentistry would become a part of the department of empiric sciences. The schools of music, architecture, painting and sculpture would form part of the broad department of æsthetic interests. Metaphysics, logic and pure sciences, including mathematics, would become a part of the department of speculative thought. Literature, language, history and the history of all human interests may become the school of the humanistic department. Law, economics, sociology, civics and such related interests would become the nucleus of the social department. Theology with its related studies would become the interest of the religious faculty. This is the ideal.

Thus a scientific order of data may be conceived for modern university activities. Thus the lines of organization may be indicated. Thus higher education, giving both knowledge and culture, may unfold for its students the full round of human interests, giving to each his best equipment for high service and endowing him with the regal power to think—to think clearly, distinctly, adequately and even exhaustively, both in words and things.

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